



DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R6–ES–2011–0040]

[4500030114]

RIN 1018-AX75

Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for *Ipomopsis polyantha* (Pagosa skyrocket), *Penstemon debilis* (Parachute beardtongue), and *Phacelia submutica* (DeBeque phacelia)

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service, are designating critical habitat for the endangered *Ipomopsis polyantha* (Pagosa skyrocket) and the threatened *Penstemon*

debilis (Parachute beardtongue) and *Phacelia submutica* (DeBeque phacelia) under the Endangered Species Act (Act). The purpose of this regulation is to conserve these three plant species and their habitats under the Act.

DATES: This rule becomes effective on [INSERT DATE 30 DAYS AFTER DATE OF FEDERAL REGISTER PUBLICATION].

ADDRESSES: This final rule, and the associated final economic analysis and final environmental assessment, are available on the Internet at <http://www.regulations.gov>. The coordinates or plot points or both from which the maps are generated are included in the administrative record for this critical habitat designation and are available at <http://www.fws.gov/mountain-prairie/species/plants/3ColoradoPlants/index.html>, <http://www.regulations.gov> at Docket No. FWS–R6–ES–2011–0040, and at the Western Colorado Ecological Services Office (see **FOR FURTHER INFORMATION CONTACT**). Comments and materials received, as well as supporting documentation used in preparing this final rule, are available for public inspection, by appointment, during normal business hours, at the U.S. Fish and Wildlife Service, Western Colorado Ecological Services Office, 764 Horizon Drive, Suite B, Grand Junction, CO 81506-3946; telephone 970-243-2778; facsimile 970-245-6933.

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Drive, Suite B, Grand Junction, CO 81506-3946; telephone 970-243-2778; facsimile 970-245-6933. If you use a telecommunications device for the deaf (TDD), call the Federal Information Relay Service (FIRS) at 800-877-8339.

SUPPLEMENTARY INFORMATION:

Executive Summary

Why we need to publish a rule and the basis for our action. Under the Act, any species that is determined to be threatened or endangered shall, to the maximum extent prudent and determinable, have habitat designated that is considered to be critical habitat. We listed these three plant species on July 27, 2011 (76 FR 45054). At the same time, we proposed to designate critical habitat (76 FR 45078). Section 4(b)(2) of the Act states that the Secretary shall designate critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, national security impact, and any other relevant impact of specifying any particular area as critical habitat. The critical habitat areas we are designating in this rule constitute our current best assessment of the areas that meet the definition of critical habitat for *Ipomopsis polyantha*, *Penstemon debilis*, and *Phacelia submutica*. Here we are designating:

- Approximately 9,641 acres (ac) (3,902 hectares (ha)), in 4 units, are being designated as critical habitat for *Ipomopsis polyantha*.
- Approximately 15,510 ac (6,217 ha), in 4 units, are being designated as critical habitat for *Penstemon debilis*.

- Approximately 25,484 ac (10,313 ha), in 9 units, are being designated as critical habitat for *Phacelia submutica*.
- In total, approximately 50,635 ac (20,432 ha), in 17 units, are being designated as critical habitat for the three species.

We have prepared an economic analysis of the designation of critical habitat. In order to consider economic impacts, we have prepared an analysis of the economic impacts of the critical habitat designations and related factors. We announced the availability of the draft economic analysis (DEA) on March 27, 2012, allowing the public to provide comments on our analysis. We have incorporated the comments and are completed the final economic analysis (FEA) concurrently with this final determination.

We have prepared an environmental assessment of the designation of critical habitat. Based on a court ruling, we must undertake National Environmental Policy Act (NEPA) analysis in the Tenth Circuit when we designate critical habitat. We announced the availability of the draft environmental assessment on March 27, 2012, allowing the public to provide comments on our assessment. We have incorporated the comments and are completed the final environmental assessment concurrently with this final determination.

Peer reviewers support our methods. We obtained opinions from four knowledgeable individuals with scientific expertise to review our technical assumptions, analysis, adherence to regulations, and whether or not we had used the best available information.

These peer reviewers generally concurred with our methods and conclusions and provided additional information, clarifications, and suggestions to improve this final rule.

Background

It is our intent to discuss in this final rule only those topics directly relevant to the development and designation of critical habitat for *Ipomopsis polyantha*, *Penstemon debilis*, and *Phacelia submutica* under the Act (16 U.S.C. 1531 *et seq.*). For more information on the biology and ecology of *I. polyantha*, *P. debilis*, and *P. submutica*, refer to the final listing rule published in the **Federal Register** on July 27, 2011 (76 FR 45054). For information on *I. polyantha*, *P. debilis*, and *P. submutica* critical habitat, refer to the proposed rule to designate critical habitat for *I. polyantha*, *P. debilis*, and *P. submutica* published in the **Federal Register** on July 27, 2011 (76 FR 45078). Information on the associated DEA and draft environmental assessment for the proposed rule was published in the **Federal Register** on March 27, 2012 (77 FR 18157).

Previous Federal Actions

The final rule listing *Ipomopsis polyantha* as an endangered species, and listing *Penstemon debilis* and *Phacelia submutica* as threatened species, was published on July 27, 2011 (76 FR 45054). Our proposal for designating critical habitat for *I. polyantha*, *P. debilis*, and *P. submutica* was published on the same date (76 FR 45078). Our notice of availability for the DEA and draft environmental assessment was published on March 27,

2012 (77 FR 18157). For other previous Federal actions, please see our final listing rule (76 FR 45054).

Summary of Comments and Recommendations

We requested written comments from the public on the proposed designation of critical habitat for *Ipomopsis polyantha*, *Penstemon debilis*, and *Phacelia submutica* during two comment periods. The first comment period associated with the publication of the proposed critical habitat rule (76 FR 45078) opened on July 27, 2011, and closed on September 26, 2011. We also requested comments on the proposed critical habitat designation and associated DEA during a comment period that opened March 27, 2012, and closed on April 26, 2012 (77 FR 18157). We did not receive any requests for a public hearing. We also contacted appropriate Federal, State, and local agencies; scientific organizations; and other interested parties and invited them to comment on the proposed rule and DEA during these comment periods.

During the first comment period, we received six comment letters directly addressing the proposed critical habitat designation. Four comment letters were received between the two comment periods. During the second comment period, we received nine comment letters addressing the proposed critical habitat designation, the DEA, or the draft environmental assessment. All substantive information provided during both comment periods has either been incorporated directly into this final determination or are addressed below. Comments received were grouped into 23 general categories

specifically relating to the proposed critical habitat designation for *Ipomopsis polyantha*, *Penstemon debilis*, and *Phacelia submutica*, and are addressed in the following summary and incorporated into the final rule as appropriate. We received several comments on our final listing determination (76 FR 45054; July 27, 2011), but are not addressing those comments because they do not apply to this determination.

Peer Review

In accordance with our peer review policy published on July 1, 1994 (59 FR 34270), we solicited expert opinions from three knowledgeable individuals with scientific expertise that included familiarity with the species, the geographic region in which the species occurs, and the principles of conservation biology. We received responses from four peer reviewers because one of the reviewers requested the assistance of two other reviewers.

We reviewed all comments received from the peer reviewers regarding critical habitat for *Ipomopsis polyantha*, *Penstemon debilis*, and *Phacelia submutica*. The peer reviewers generally concurred with our methods and conclusions and provided minor additional information, clarifications, and suggestions to improve the final critical habitat rule. Peer reviewer comments are addressed in the following summary and are incorporated into the final rule as appropriate.

(1) Comments on the pollinators of *Ipomopsis polyantha*: One peer reviewer questioned some of the pollinator information presented for *I. polyantha*. This reviewer questioned whether the self-pollination we discussed was with or without the assistance of a pollinator. The reviewer also questioned if our pollinator information for *I. polyantha* was based on visitor information versus pollinator information, that is, if the insects listed were just visiting the plants, or if they were actually pollinating the flowers. In addition, the reviewer wondered if night-time pollinator experiments, collections, or observations were performed, since some other *Ipomopsis* species are primarily pollinated by night-flying hawkmoths.

Our Response: We based our conclusions on *Ipomopsis polyantha* pollination on a study done by Collins (1995). This breeding system study, looking at *Ipomopsis polyantha*'s ability to set fruit with and without a pollinator, examined the ways in which pollination was most successful (Collins 1995, pp. 35–46). Given that open-pollinated and cross-pollinated individuals produced far more fruit than self-pollinated individuals without pollinators, we continue to conclude that pollinators are necessary for successful reproduction of *I. polyantha*. We have changed the text regarding the physical and biological features for the plant in an effort to better capture this information.

The *Ipomopsis polyantha* pollinator studies occurred only from dawn to dusk (Collins 1995, p. 30); therefore, we are unsure about night-time visitors. However, we have information about crepuscular (low-light) visitors, which includes hawkmoth species. Several butterfly, hawkmoth, fly, and other insect species were observed as

visitors to *I. polyantha* plants, but not as the primary pollinators (Collins 1995, pp. 48–50). Only 9 of the more than 300 flower visits were from a hawkmoth (*Hyles lineata*) (Collins 1995, pp. 48–50). Further research would likely refine what we know about the primary pollinators and our information on night-time pollination; however, based on the best available information and the detailed information from the Collins (1995) study, we conclude that our information does distinguish between pollinators and visitors. If there are critical night-time pollinators, we have no information on them. As such, we did not adjust our criteria, physical and biological features, or primary constituent elements (PCEs) to address night-time pollination.

(2) Comments on the genetic diversity of *Penstemon debilis*: One peer reviewer provided information relating to genetic diversity, the potential clonal nature, and connectivity between sites for *P. debilis*. Given the underground stems of *P. debilis*, the reviewer concluded that the actual population size has been greatly overestimated. The reviewer provided information relating to quantitative, not neutral (genetic markers that are not directly linked to a species fitness), genetic diversity, with several citations in reference to the genetic work that has been done for *P. debilis*. Another commenter stated that the genetic diversity work was inadequate, not reproducible, and the conclusions about inbreeding depression were erroneous or in conflict with the reproductive biology study on the species.

Our Response: An individual stem or plant that is part of a clonal colony or genet (group of genetically identical individuals) is called a ramet. A common example of a

ramet is the aspen tree (*Populus tremuloides*), which appears as an individual tree, but is genetically identical to its neighbor. Our population estimates for *Penstemon debilis* correspond to ramets, so are likely an overestimate of the number of unique individuals. Although we know *P. debilis*' neutral genetic diversity is low when compared to other species of plants with similar life-history traits (Wolfe 2010), we do not know how many of the ramets that have been counted as individuals are part of the same genet. Further research is needed to answer this question. Therefore, our estimate of the known individuals of *P. debilis* is likely an overestimate (as discussed under the physical and biological feature of "disturbance" for the species and under *Criteria Used To Identify Critical Habitat* below), and could be a large overestimate (Tepedino *in press* 2012, pp. 1–10). Please see comment 4 below for further information on the number and size of critical habitat units (CHUs) relating to this topic.

In response to the peer reviewers' comments on genetic variation, we recognize that the genetic information we have for *Penstemon debilis* (Wolfe 2010, pp. 1–7) is based on neutral genetic markers (genetic markers not specifically linked to a species' fitness) and does not specifically address the species' ability to persist into the future. However, the genetic data do show that the species suffers from some level of lowered genetic diversity and are the best available information we have at this time.

Our genetic information for *Penstemon debilis* comes from the work of Dr. Andrea Wolfe, one of the foremost experts on *Penstemon* genetics in the country (see <http://www.biosci.ohio-state.edu/~awolfe/> for background on the techniques she uses to

assess genetic diversity). We recognize that we do not as yet have a peer-reviewed manuscript of her work. However, the Act requires that we use the best available information, and we find that Dr. Wolfe's summary of *P. debilis* genetics represents the best currently available information. We find her calculation of inbreeding coefficients are based on sound and reliable techniques. Furthermore, Dr. Wolfe is in the process of writing a more formal manuscript summarizing her data (Wolfe *et al.* 2012, pp. 1–31).

In general, fitness, the size of a population, and genetic diversity are positively correlated (reviewed in Leimu *et al.* 2006, pp. 942–952). More individuals usually equate to better fitness and higher genetic diversity, and fewer individuals are usually accompanied by less fitness and lower genetic diversity. Low genetic diversity can be a problem for species, especially those with limited population numbers or ranges, for several reasons: The effects from inbreeding can reduce fitness; the loss of genetic diversity (through genetic erosion or genetic drift that leads to the loss of genes or alleles) lessens the ability of populations to cope with environmental change; mutations can accumulate in small populations, (although there is less evidence this is a problem) (summarized in Frankham 2005, pp. 131–140); and outcrossing rates may be reduced (Aguilar *et al.* 2008, p. 5182). Inbreeding depression is defined as reduced fitness as a result of breeding related individuals. The more generations that have elapsed since a population has been fragmented or isolated, the less genetic diversity (Aguilar *et al.* 2008, p. 5183).

As pointed out by a commenter, the McMullen study did not find any inbreeding

or outbreeding depression for the measure of fruit set for *Penstemon debilis* (McMullen 1998, p. 25). Fruit weight and seed set provided weak evidence that inbreeding depression may be occurring (McMullen 1998, pp. 25–26, 41). It is likely that the effects to fruit weight and seed set are what Dr. Wolfe was referencing when she referred to inbreeding depression. The Wolfe (2010, pp. 1–7) study demonstrates that genetic diversity is low for *P. debilis*, implying a lowered fitness. It also is reasonable to assume that inbreeding depression may be occurring based on small population sizes, the inbreeding depression (albeit weak) seen in the McMullen (1998) study, and the low genetic diversity and the inbreeding coefficients from the Wolfe study (Wolfe 2010, p. 3). The low population numbers and low genetic diversity of *P. debilis* are well substantiated by the best available information, and there are no data to suggest otherwise.

(3) Comment on *Penstemon debilis* site connectivity: One peer reviewer stated that the key to connectivity between *P. debilis* sites is other co-occurring *Penstemon* species, and specifically *P. caespitosa* (mat penstemon) that shares numerous pollinators with *P. debilis*, as discussed in the study done by McMullen (1998).

Our Response: Based on this comment on *Penstemon caespitosa*, that this species is especially important for the support of *P. debilis* pollinators, and correspondingly influencing the connectivity between sites of *P. debilis* (McMullen 1998, p. 27; Tepedino 2011, p. 3), we have added this species to our list of “Plant Community” features in our PCEs.

(4) Comments on unoccupied critical habitat units (CHUs) for *Penstemon debilis*:

One peer reviewer commented that for *P. debilis*, based on its clonal nature and low population numbers, the “redundancy” criteria was only partially satisfied through the proposed designation of two unoccupied areas. The reviewer said that more distant populations are needed so the species is subject to more environmental exigencies (characters). A commenter supported the designation of unoccupied units for *P. debilis* for future recovery efforts, stating that transplanting or the creation of new populations is feasible and necessary for the species’ recovery. A State commenter supported our designation of unoccupied CHUs, but suggested we consider existing leases on Federal parcels in our designation of unoccupied CHUs for *P. debilis*, to avoid conflicts with active or long-term mineral leases. This same State commenter reminded us that research in the future may lead to a better refinement of the areas we consider suitable for introduction efforts, and that we may want to consider revisions to these unoccupied CHUs in the future.

Our Response: Through this designation, we have tried to ensure there are sufficient areas for population expansion in the future. Because of the small number of individuals, clonal nature, and limited number of populations, recovery of *Penstemon debilis* will need to include the establishment of new populations of the plant, and this is why we are designating unoccupied units. We will better understand how many populations are needed (redundancy), and exactly where these new populations will need to be established, in the future, when we have completed the recovery planning process. Furthermore, we are not precluded from introducing *Penstemon debilis* into undesignated

areas in the future.

When we overlaid our rough suitable habitat layer for *Penstemon debilis* with private and Federal lands, we mapped 16,862 ac (6,824 ha) of suitable habitat, 68 percent on private lands and 32 percent on Federal (Bureau of Land Management (BLM)) lands, with a spotty distribution measuring roughly 39 miles (mi) (63 kilometers (km)) from east to west and 17 mi (28 km) from north to south. Of the 5,323 ac (2,154 ha) on BLM lands, 1,515 ac (613 ha) fell within occupied units (Units 3 and 4), leaving 3,808 ac (1,541 ha) of suitable habitat (23 percent of the total suitable habitat). The remaining BLM ownership contains two large patches of suitable habitat, which we identify as the unoccupied units (Units 1 and 2). These unoccupied units contain 1,358 ac (550 ha) of suitable habitat, representing 40 percent of the remaining suitable habitat area on BLM lands. Additional suitable habitat on BLM lands was much more fragmented and spotty, not comprising the same large, contiguous blocks as the unoccupied units. The majority of the remaining habitat on BLM land has already been leased. Thus, the four CHUs represent a good portion of the range of the suitable habitat we mapped. We have added this language to *Criteria Used To Identify Critical Habitat*, below.

We make decisions on what areas to designate as critical habitat based on the best available information. We may refine our knowledge of *Penstemon debilis* and what constitutes suitable habitat in the future as new information becomes available. Additional information on the soil and habitat conditions needed to maximize the success of *P. debilis* introduction efforts in the future will aid in recovery. We agree there is a

strong possibility, given careful research efforts, that we will be able to create new populations of *P. debilis* in the future.

(5) Comments on our criteria for designating our CHUs: All of our peer reviewers responded favorably to the criteria we developed for the identification of critical habitat of *Ipomopsis polyantha*, *Penstemon debilis*, and *Phacelia submutica*. Another reviewer responded that, given the low number of individuals for *P. debilis*, it was appropriate that we include pollinator habitat (the 3,280-foot (ft) (1,000-meter (m) area). This same reviewer supported our 328-ft (100-m) area for *P. submutica* to help offset edge effects, climate change, the ephemeral nature of the species, and other impacts.

Another commenter stated that areas without suitable habitat should be excluded from the critical habitat designation for *Penstemon debilis*, particularly in Unit 3. This commenter stated that because we did not list the loss of pollinator habitat due to energy development as a threat in our final listing rule (based on the disturbance of vegetated areas being not nearly as extensive as the foraging distance of the pollinators), it was inappropriate to include pollinator areas. This same commenter discussed that *P. debilis* is a habitat specialist, making nonoccupied areas outside of suitable habitat unnecessary to the conservation of the species, because areas with denser vegetation were unsuitable for the plant growth. This commenter said we had provided no basis for including these areas. The commenter stated that unoccupied habitat must be “essential for the conservation of the species,” a higher standard than for occupied habitat. This same

commenter stated that unoccupied areas with suitable habitat, unoccupied areas with unsuitable habitat, and areas beyond 328-ft (100-m) from identified occurrences should not be included. The commenter provided a paper (Elliot 2009) regarding bumblebees in Colorado supporting this 328-ft (100-m) area, and stated that this area applied on OXY USA WTP LP and Occidental Oil Shale, Inc. (collectively “Oxy”) lands and had adequately protected *P. debilis* for 2 decades.

Another commenter stated that our DEA did not account for the effect of the additional 3,280-ft (1,000-m) buffer for *Penstemon debilis* when estimating the potential impacts of critical habitat designation, nor did it analyze the potential impact on unoccupied critical habitat areas with valid lease rights. This commenter also questioned the information in the draft environmental assessment relating to dust deposition and its effects to species, stating that our information was based on different species in different habitats and, therefore, was not applicable. This commenter stated that the draft environmental assessment relied on information contained in a study by Tepedino (2009), which was on a different species not closely related to *P. debilis*, and that the study by McMullen (1998) concluded that pollinators were not limiting seed set for *P. debilis*, and, therefore, should not be a primary concern to managers.

Another commenter discussed the recommended 656-ft (200-m) buffer avoidance distance being implemented by the BLM for surface disturbances near *Phacelia submutica*. This commenter stated we had failed to use any specific scientific studies that address impacts for oil and gas activities to *P. submutica*, and that we must conduct these

studies.

Our Response: We consider all of Units 1 and 3 for *Ipomopsis polyantha*, all of Units 3 and 4 for *Penstemon debilis*, and all the *Phacelia submutica* units to represent the geographical area “on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protections.” Because all of these units contained plants at the time of listing, they are occupied. Physical and biological features are further defined in 50 CFR § 424.12 as the features that may include but are not limited to: (1) Space for individuals and population growth, and for normal behavior; (2) Food, water, air, light, minerals, or other nutritional or physiological requirements; (3) Cover or shelter; (4) Sites for breeding, reproduction, rearing of offspring, germination, or seed dispersal; and (5) Habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species. We consider the pollinator areas to be essential for reproduction, because both *P. debilis* and *I. polyantha* require pollinators for successful reproduction (Collins 1995, pp. 35–46; McMullen 1998, pp. 25–27). We consider the suitable habitat in the *P. debilis* CHUs to be essential sites for seed dispersal and population growth, with the added benefit of providing potential areas for future expansions or introduction efforts or to locate as of yet undiscovered populations. Therefore, these units contain areas occupied by the plants as well as areas with the physical or biological features essential to the conservation of the species (including areas for pollinators and seed dispersal) and that may require special management.

In this final rule, we have further explained our criteria, especially with respect to inclusion of pollinator areas, under *Criteria Used To Identify Critical Habitat*, below. We are also providing further explanation on these criteria in our final environmental assessment. We recognize that more species-specific research would strengthen our criteria; however, in the absence of this, we found the best available information was that on similar or related species, and used information in the general literature, including Elliot (2009, pp. 748–756), in order to define pollinator areas. Our criteria are scientifically based and provide a strong rationale for conserving these three plant species. Both *Ipomopsis polyantha* and *Penstemon debilis* require pollinators for successful reproduction and genetic exchange. Although pollinators were not found to be limiting seed set, McMullen (1998, p. 33) indicated that the entire suite of pollinators should be considered important to the long-term reproductive success of *P. debilis*. Thus, we delineated occupied areas, and evaluated the certainty that these areas would continue to have adequate pollinators, one of the essential physical and biological features for these species, in our process of critical habitat identification.

Pollinators are necessary for the reproduction of *Penstemon debilis* (McMullen 1998, pp. 25–27). Pollinators use a variety of habitats and floral resources and, therefore, are not confined to suitable habitat for *P. debilis*. Pollinators generally need: (1) a diversity of native plants whose blooming times overlap to provide flowers for foraging throughout the seasons; (2) nesting and egg-laying sites, with appropriate nesting materials; (3) sheltered, undisturbed places for hibernation and overwintering; and (4) a

landscape free of poisonous chemicals (Shepherd *et al.* 2003, pp. 49–50). Encompassing a diversity of habitats and vegetation types will encourage a diversity of pollinators. Our pollinator areas were designed to consider and accommodate these requirements, and we have included additional language in our *Criteria Used To Identify Critical Habitat*, below.

Regarding the comment relating to our final listing rule and the threats to pollinators, threats and the physical and biological features essential to the conservation of a species are not the same. If the loss of pollinator habitat is not considered a threat, this does not mean that pollinator habitat is not essential for the conservation of a species. Additionally, in our final listing rule, we qualified the loss of pollinator habitat and the threat it poses, by stating that the degree of impact was unknown. Through this designation of critical habitat, lease rights will not be revoked or removed, nor is there any requirement for projects to completely avoid critical habitat. The 200-meter buffer mentioned by a reviewer is currently being utilized by the BLM, not the Service.

The FEA considers effects within CHUs incrementally, with the most stringent project modifications within 328-ft (100-m) of plants, more moderate measures from 328 to 984 ft (100 to 300 m), and measures to protect pollinators and habitat beyond 984 ft (300 m) (Industrial Economics, Inc. 2012, pp. ES-5, 2-9, 3-14, 4-2). These project modification distances are based on our draft projection of what section 7 consultations may consider for these three plants (Service 2012a, pp. 1–28). These distances are based on potential effects from disturbances including dust, pollutants, changes in erosion and

sedimentation, habitat degradation, an increase in nonnative species, and increased fire risk, among others.

Given the lack of species-specific studies, and the relatively recent (in the last 10 to 15 years) disturbance caused by oil and gas development, we conducted an extensive literature review on effects from disturbances, as well as from habitat fragmentation. To date, we have reviewed 45 papers that evaluate the relationship between distance from a disturbance to the intensity of that disturbance, from a wide array of disturbances and in a wide array of ecosystems (Service 2012a, pp. B-3 to B-4). From this review, we have found effects extending from 33 ft (10 m) to over 6,562 ft (2,000 m), but with the majority of effects concentrated in the first several hundred meters (Service 2012a, pp. B-3 to B-4). From this, and in conjunction and coordination with others, we have developed the 328-ft (100-m) and 984-ft (300-m) draft guidelines for effect determinations in section 7 consultations related to all plant species in Colorado (Service 2012a, pp. 1–28), which were used in the DEA (Industrial Economics, Inc. 2012, pp. ES-5, 2-9, 3-14, 4-2). In combination, we also have reviewed 74 papers looking at the effects of habitat fragmentation on a wide array of plants and in a wide array of ecosystems (Service 2012a, pp. B-5 to B 11).

We recognize that the availability of more species-specific information evaluating the effects of disturbances, such as those from oil and gas development, may have helped us more accurately delineate critical habitat. There are ongoing studies on how disturbances are affecting six rare plants in Western Colorado and Eastern Utah, which

are already listed under the Act (BIO-Logic 2010, pp. 1–9; Pitts *et al.* 2010, pp. 1–7; BIO-Logic 2011, pp. 1–10). However, much of the oil and gas development in the areas where these plants are found is recent and, given that the effects from habitat fragmentation and degradation can take many generations to be realized (Aguilar *et al.* 2008, p. 5183), initial studies may not show these effects. These studies may need to be done repeatedly in increments of 20 years or more. Compounding the problem, rare plants are inherently difficult to sample because of small populations and corresponding small sample sizes.

Comments from the State of Colorado

Comments received from the State (specifically the Colorado Natural Areas Program (CNAP)) regarding the proposal to designate critical habitat for *Ipomopsis polyantha*, *Penstemon debilis*, and *Phacelia submutica* are addressed below.

(6) Comments on *Ipomopsis polyantha* Unit 3, Pagosa Springs: The State commented that both a State Land Board (SLB) parcel and a State Wildlife Area fall within the boundaries of this unit. They informed us that the SLB has signed and is implementing a rare plant environmental review policy that will assure any ground-disturbing projects or major land use changes will not impact *I. polyantha*. Because this policy would provide more protection than the critical habitat designation (since plants are afforded few protections on State lands), the State requested that the SLB parcel be excluded from the critical habitat designation. The State did not request that the State

Wildlife Area be excluded from critical habitat.

Our Response: We have reviewed the Colorado SLB Procedures for Rare Plant Environmental Review for Development Projects and Land Use Changes (State Board of Land Commissioners 2012, 3 pp.) that began being implemented on April 19, 2012. These procedures formalize SLB's practice of engaging the CNAP to ensure that projects on SLB lands move forward in a manner protective of rare plants. We commend the SLB and CNAP for their proactive efforts to conserve rare plants in the State of Colorado. This rare plant environmental review policy will provide protections for the plant on SLB lands for all projects, not just projects involving a Federal action (such as funding or permitting). However, we could find no tangible benefits to exclusion from critical habitat, as Federal activities on these lands that would invoke the protective standards for critical habitat are expected to be rare. The number of acres involved (110 ac (44 ha)) is relatively small and included within critical habitat for pollinator protection (the species is currently not present on the site). Thus, we do not believe that there are any benefits of exclusion that would outweigh the benefits of inclusion. We look forward to cooperating further with the State on *Ipomopsis polyantha* conservation and recovery at all these sites.

(7) Comments on exclusions and the management of *Penstemon debilis* on Oxy lands in Unit 3, Mount Callahan: Based on the success of ongoing conservation actions, the State commented that they support excluding all Oxy lands within this CHU (Unit 3, Mount Callahan). To support this exclusion, they are expanding the existing Colorado Natural Areas (CNA) agreement to include the Mount Logan Mine area, developing best

management practices (BMPs) for habitat adjacent to the CNA to protect pollinators and habitat, and conducting further surveys for *P. debilis* in suitable habitat and the protection of new populations, should they be located on Oxy lands. The State commended Oxy for their long-term voluntary efforts to protect *P. debilis* and discussed the BMPs in place for protection of *P. debilis*. The State emphasized it is important to recognize these voluntary efforts, encouraging private land efforts such as these now and into the future. The State also commented that these voluntary protections would lead to more conservation than the protections afforded by critical habitat.

An additional commenter on behalf of Oxy also supported excluding all Oxy lands within the *Penstemon debilis* Unit 3, Mount Callahan. To support this exclusion, Oxy has agreed to expand the CNA agreement to include the Mount Logan Mine area (totaling roughly 762 ac (308 ha)), develop BMPs to provide protection for habitats and pollinators in areas adjacent to the natural areas, conduct further surveys in suitable habitat and include newly discovered *P. debilis* populations with over 75 individuals in a Natural Area, and extend the termination clause on the CNA agreement from 90 days to 2 years. This commenter expressed concern that designating critical habitat on Oxy lands would unreasonably delay and complicate domestic energy production on Oxy lands and unnecessarily burden Oxy. The commenter stated that voluntary conservation efforts would provide better protections for *P. debilis* than the species would receive through the critical habitat designation because the Act only protects plants on private lands when there is a Federal action (such as Federal funding or a necessary Federal permit). The commenter also suggested that the proposed critical habitat designation did not

appropriately recognize the efforts undertaken by Oxy, which may be interpreted as a disincentive for voluntary protections.

Another commenter supported the exclusion of Oxy lands, provided our overall criteria for designating critical habitat for *Penstemon debilis* were not changed. This support was based on the additional protections Oxy has agreed to, as described in the previous paragraph. This commenter stated that a permanent conservation easement for the CNA would provide additional protections. One peer reviewer expressed concern over the CNA exclusion, because the site is relatively undisturbed, making it a high-quality (intact) area.

Our Response: Oxy has the majority of three of the four viable populations of *Penstemon debilis* on their private lands, making their cooperation in the conservation of the species essential. We recognize that the voluntary conservation actions that Oxy has undertaken to protect *P. debilis* on their lands have been vital to the conservation of the species. In our proposed critical habitat rule, we announced we were considering the exclusion of Oxy lands based on the efforts of the landowner.

Oxy has been working to protect *Penstemon debilis* since 1987, when they first entered into a CNA Agreement. These protection efforts include regular monitoring of *P. debilis*, population avoidance, and the development and implementation of BMPs to protect and conserve the species. In 2008, Oxy expanded the CNA to include a second population of *P. debilis*. Because of Oxy's long-standing efforts to conserve *Penstemon*

debilis and Oxy's efforts to work towards further protections for the plant, we are excluding all Oxy lands within Unit 3, Mount Callahan. We are excluding these lands based on the approved agreements Oxy has made to date and their efforts to move toward finalizing the additional agreement to conserve this species, as evidenced by the ongoing conservation partnership, as described above and under **Exclusions** below. We recognize that the Mount Callahan area represents a high-quality setting. Before we may make an exclusion from areas that meet the definition of critical habitat, we must weigh the benefits of inclusion versus the benefits of exclusion. Because plants receive very few protections on private lands under the Act (which primarily occur only in the event of a Federal action, such as Federal permitting or Federal funding), and because of the protections and greater conservation benefits provided by Oxy, we determine that the benefits of excluding Oxy lands outweigh the benefits of including these areas. This is further discussed under **Exclusions** below.

We agree with a commenter that a permanent conservation easement would be preferable to voluntary protections, but we also recognize that effective conservation can occur in other ways. In addition, Oxy's long-term commitment to protect the species, since 1987, (CNAP 1987, entire) provides us assurance that these voluntary protections will continue into the future.

(8) Comments on requests for extensions: The State commented that there was not adequate time to get the new CNA agreement with Oxy signed before the final critical habitat rule is due for publication. Oxy echoed the same concerns, and requested

an extension of the final rule until July 27, 2013, citing language in the regulations as well as the Act allowing a 2-year extension on critical habitat determinations. We received an additional comment supporting an extension to accommodate the signing of Oxy's CNA agreement for *Penstemon debilis*.

Two counties, two oil and gas companies, and two groups associated with the oil and gas industry requested an extension on the final designation of 120 days, until August 24, 2012, to comment on the DEA.

Our Response: In an effort to improve implementation of the Act, we reached a multi-district litigation settlement with WildEarth Guardians in May 2011 (*WildEarth Guardians v. Salazar* MDL Docket No. 2165 (2011)) and with the Center for Biological Diversity in July 2011 (*Center for Biological Diversity v. Salazar* MDL Docket No. 2165 (2011)) outlining a multi-year listing work plan to systematically review and address species, especially those listed as candidates under the Act. The agreement includes species across the country, and sets specific timelines for actions to be completed. The work plans for these agreements identify that we will complete the final critical habitat rule for *Ipomopsis polyantha*, *Penstemon debilis*, and *Phacelia submutica* before the end of the 2012 Fiscal Year (the end of September 2012) (*WildEarth Guardians v. Salazar* MDL Docket No. 2165 (2011)). This timing does not allow us to extend the comment period.

Moreover, we believe adequate time has been provided for the public to provide

comment on the proposed critical habitat rule and the associated economic analysis. We have requested comments on critical habitat in our notice of availability of the DEA and draft environmental assessment from March 27 to April 26, 2012 (77 FR 18157). We requested information on the proposed critical habitat designation, including a request for information on economic impacts, from July 27 to September 26, 2011. Furthermore, we requested information on potential critical habitat areas in our proposed listing rule from June 23 to August 23, 2010 (75 FR 35721).

We worked closely with Oxy and the CNAP on their expansion of the CNA agreement and to address exclusion of all Oxy lands within the *Penstemon debilis* Unit 3, Mount Callahan (see **Exclusions**, below, for a more thorough discussion).

(9) Comments on unoccupied CHUs for *Ipomopsis polyantha*: We received comments from the U.S. Forest Service (USFS) relating to the boundaries of our two unoccupied CHUs for *I. polyantha*: Unit 2, the O’Neal Hill Special Botanical Area and Unit 4, Eight Mile Mesa. The comments discussed how the bottomland areas of Unit 2 do not provide suitable habitat for *I. polyantha* because of the dense ground cover with little exposed shale. The USFS also discussed several small areas in Unit 4 that were separated from the large parcel of contiguous habitat by roads, making management complicated and not providing good areas for future introductions. Another commenter supported these refinements of these critical habitat units as identified in the notice of availability (77 FR 18157).

Our Response: We confirmed these comments during site visits in the summer of 2011 and have accordingly adjusted the boundaries of both units by removing unsuitable habitat. The area of Unit 2 decreased from 784 to 564 ac (317 to 228 ha), and the area of Unit 4 decreased from 1,180 to 1,146 ac (478 to 464 ha).

(10) Comment on the quality of information used: One commenter questioned the validity of our information, although no specifics were provided, stating that our finding is based on weak and unreliable scientific information. The commenter stated that by using unpublished reports we were not relying on the best data available. The commenter stated that we should use peer-reviewed science. Another commenter stated that the designation is based on incomplete and outdated science and that the data we relied on were either incomplete, not fully considered, or were improperly relied on and that our proposed critical habitat designation was therefore flawed. This same commenter requested that we conduct another peer review because of our data quality issues. Another commenter stated that our DEA and draft environmental assessment did not contain sufficient scientific analysis to justify the breadth of the critical habitat designation, although the commenter was not specific on what additional information was needed. This same commenter stated that the draft environmental assessment did not meet our information quality guidelines, stating that element occurrence data and genetic data are not publicly available.

Our Response: Section 4 of the Act requires that we designate critical habitat on the basis of the best scientific data available. Further, our Policy on Information

Standards under the Act (published in the **Federal Register** on July 1, 1994 (59 FR 34271)), the Information Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106-554; H.R. 5658)), and our associated Information Quality Guidelines, provide criteria, establish procedures, and provide guidance to ensure that our decisions are based on the best scientific data available. They require our biologists, to the extent consistent with the Act and with the use of the best scientific data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat. Primary or original sources are those that are closest to the subject being studied, as opposed to those that cite, comment on, or build upon primary sources.

The Act and our regulations do not require us to use only peer-reviewed literature, but instead they require us to use the “best scientific and commercial data available” in a critical habitat designation. We use information from many different sources, including survey reports completed by qualified individuals, Master’s thesis research that has been reviewed but not published in a journal, status reports, peer-reviewed literature, other unpublished governmental and nongovernmental reports, reports prepared by industry, personal communication about management or other relevant topics, and other sources. Also, in accordance with our peer review policy, published on July 1, 1994 (59 FR 34270), we solicited expert opinions from knowledgeable individuals with scientific expertise that included familiarity with the species, the geographic region in which the species occurs, and conservation biology principles. Additionally, we requested comments or information from other concerned governmental agencies, the scientific

community, industry, and any other interested parties concerning the proposed rule. Comments and information we received helped inform this final rule.

In conclusion, we believe we have used the best available scientific information for the designation of critical habitat for these three plants. We did conduct a peer review of our proposed critical habitat designation and incorporated changes into this final rule.

(11) Comment on the taxonomic validity of *Phacelia submutica*: One commenter questioned the validity of *P. submutica* as a stand-alone species, citing that NatureServe recognizes the plant as a variety instead of a species.

Our Response: *Phacelia submutica* also has been known by the name of *P. scopulina* var. *submutica*. In 1944, Howell described *P. submutica* as a distinct species, citing 13 different characteristics that distinguished the 2 taxa (Howell 1944, pp. 371-372). In 1981, Halse changed the species to a variety, stating the taxon was not well enough differentiated to deserve species recognition, but did merit varietal status. His determination was based on limited material (Halse 1981, p. 130; O’Kane 1987, p. 2). The Colorado Natural Heritage Program (CNHP), which is part of the NatureServe network, recognizes the taxon as a species (CNHP 2012b, pp. 19-110), which should eventually translate to a change at the National level. The Biota of North America Program (BONAP) now recognizes the taxon as a species (Kartesz 2009, p. 1), which similarly should eventually make its way to the USDA Natural Resources Conservation Service’s Plants Database site, as well as the Integrated Taxonomic Information System.

We determine, based on BONAP and other findings, this to be the best available information on the taxonomy of the species.

(12) Other comments on exclusions: One commenter suggested that any entities that invoke voluntary conservation efforts that have proven to be effective on private lands or leased public lands should be granted appropriate exclusions to continue economic activities in those areas. This same commenter urged us to consider exclusions for all three species on both private and public lands. One commenter stated that critical habitat should not be designated on any private lands. Several commenters suggested exclusions based on economic impacts to the oil and gas industry.

Our Response: Aside from the Oxy CNA agreement and the Colorado SLB rare plant environmental review policy, we are unaware of any other effective voluntary conservation efforts for these three plant species, nor did the commenter provide examples of such efforts. Without knowledge of these agreements, we are unable to assess the benefits of inclusion versus the benefits of exclusion. Although plants receive few protections on private lands, the Act does not allow us to exclude habitat areas for plants based on this reasoning. Instead, as the Act states, we must designate the geographic areas “on which are found those physical or biological features (I) essential to the conservation of the species.” We are not making any exclusions based on the economic analysis, as we concluded that this rule would not result in significant economic impacts (please see Exclusions Based on Economic Impacts, below). We are excluding lands covered by the voluntary agreements between Oxy and CNAP from this

final designation (see Exclusions Based on Other Relevant Impacts, below).

(13) Comments on designating unoccupied units for *Phacelia submutica*: One commenter suggested we consider designating other similar slopes and soils with the PCEs for *P. submutica* based on the potential habitat model done by Decker *et al.* (2005).

Our Response: The Decker *et al.* (2005) habitat model is not refined enough to allow us to find the small barren patches, within the larger plant communities, where *Phacelia submutica* is found. In addition, we believe that the CHUs we have identified contain the PCEs and are adequate in number, size, and distribution to provide adequate redundancy, resiliency, and representation for the species.

(14) Comments on plant locations: One commenter asked why we did not include *Phacelia submutica* locations east of Parachute, Colorado.

Our Response: The three *Phacelia submutica* points identified by the commenter have not been verified. The botanist at the Colorado River Valley Field Office of the BLM has revisited these sites and did not find any suitable habitat or plants. She believes the contractor that located the plants may have been mistaken in their identification (DeYoung 2010b, p. 1). Based on this information, we conclude that the site does not meet the definition of critical habitat.

(15) Comments on designating critical habitat: One commenter stated that we had not established that designating critical habitat is necessary for these species.

Our Response: The Act specifically states in section 4(a)(3)(A) that critical habitat will be concurrently designated with a listing determination for threatened or endangered species. Critical habitat is defined in section 3 of the Act as: (1) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (a) essential to the conservation of the species, and (b) which may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination by the Secretary that such areas are essential for the conservation of the species. Section 4 of the Act requires that, to the maximum extent prudent and determinable, critical habitat will be designated for threatened and endangered species. In our final listing rule for the three species (76 FR 45054), we found that designating critical habitat was both prudent and determinable.

(16) Comments on disturbance and *Penstemon debilis*: One commenter stated that we did not evaluate the positive effects of oil and gas development to *P. debilis* since the species prefers disturbed soils and has expanded populations in areas that have been previously disturbed.

Our Response: We recognize that *Penstemon debilis* prefers some levels of natural disturbance, and indicate this in both our description of physical and biological features and our list of PCEs. However, we have no information to suggest that *P. debilis* benefits from artificial disturbances associated with oil and gas activities. We know that *P. debilis* is found in artificially disturbed areas at Mount Logan Mine. However, we have no information on where the plant was distributed prior to that disturbance. For example, we do not know if the plant was once found across the entire area and is now distributed in small patches, or if the plant was introduced to the site with seeds. We also have no information on which type of artificial disturbances, and at what levels, may or may not benefit the plant. Therefore, we have not evaluated these effects.

(17) Comments related to baseline conservation already required for oil and gas development relating to the DEA: One commenter noted that the DEA did not consider the impacts to oil and gas development caused by the restrictions set forth in the Roan Plateau Resource Management Plan (RMP) Amendment. The commenter stated that the restrictions set forth in this RMP combined with the designation of critical habitat for the *Penstemon debilis* are likely to create a situation where it will be extremely difficult, if not impossible, to locate well pads and associated infrastructure.

Our Response: The DEA considers the restrictions placed on oil and gas development on lands managed by the BLM Colorado River Valley Field Office, which administers the Roan Plateau RMP. First, lands managed by BLM that are covered by a no surface occupancy (NSO) stipulation (where future oil and gas development will not

likely pose a threat to the plant) are not included for consideration in the incremental effects analysis of the DEA. Next, the analysis considers the other restrictions placed on oil and gas development by the Roan Plateau RMP and the conservation measures likely requested by the Service during section 7 consultation and concludes that these restrictions do not appear to preclude drilling activities. More specifically, as described in Section 3.4.1 of the DEA, during section 7 consultation the Service may request changes to the design of a well pad and supporting infrastructure within 300 meters of *Penstemon debilis* occurrences to avoid jeopardy to the species. While this baseline conservation effort may affect the location of some well pads, it is unlikely to affect the siting of most wells within the critical habitat area. A discussion of this concern has been added to Section 3.3.1 of the FEA. A more specific discussion of the Roan Plateau RMP Amendment has been added to Section 3.3.2 of the FEA.

The RMP has two lease stipulations that directly address endangered, threatened and candidate plants. A no surface occupancy lease stipulation (NSO-12) protects occupied habitat and adjacent potential habitat from ground disturbing activities, with narrow exceptions. A controlled surface use stipulation (CSU-12) protects special status plant species and plant communities by authorizing BLM to impose special design, operation, mitigation and reclamation measures, including relocation of ground disturbing activities by more than 200 meters, with some exceptions. Special management considerations and protections are thus contemplated.

(18) Comments related to oil and gas development and the DEA: Multiple commenters asserted that the DEA underestimates impacts to the oil and gas industry. The commenters stated that oil and gas development on Federal lands is currently subject to overlapping regulations, seasonal restrictions, and legal challenges. Commenters indicated that these restrictions complicate access to Federal resources and often lead to delays in resource extraction. The commenters asserted that the proposed critical habitat will create further delays and, when combined with the current restrictions, may potentially prohibit oil and gas development within certain portions of the proposed critical habitat areas that overlap existing oil and gas fields or areas prospective for natural gas. Commenters indicated that the economic impact to oil and gas companies and Federal, State, and local governments associated with the lost potential to develop oil and gas resources would exceed the costs associated with section 7 consultation currently quantified in the DEA.

Our Response: The Service is committed to working with project proponents to implement a series of conservation efforts to protect the plants and their habitat, while allowing oil and gas development projects to move forward. The DEA recognizes that oil and gas resources on Federal lands are managed through a myriad of regulations. Section 3.3.2 of the DEA describes some of these regulations and how they affect the level of future oil and gas development within the proposed critical habitat. During section 7 consultation, the Service is likely to recommend a series of conservation efforts within critical habitat to avoid impacts to the plants and their habitat. The Service does not expect to recommend the prohibition of oil and gas activities from critical habitat

areas and does not believe that the recommended conservation efforts will lead to a decrease in oil and gas development. Therefore, the DEA quantifies the reasonably foreseeable costs associated with these conservation efforts and does not quantify impacts associated with a decrease in resource extraction.

In addition, paragraph 96 of the DEA discusses the potential for time delays associated with consultation. This paragraph qualitatively discusses the potential for this impact, but notes that the extent of possible delay is not known and therefore the impact of time delay is not quantified in this analysis. The Service does not expect to recommend timing or seasonal restrictions for the plants that could potentially overlap with those currently in place on Federal lands for other species. A more detailed section on the concerns raised by these commenters has been added to Section 3.3.1 of the FEA.

(19) Comments related to the uncertainty associated with future oil and gas development and the DEA: Multiple commenters asserted that the methods used in the DEA to forecast the level of future oil and gas development are flawed and the resulting estimates of the number of wells drilled is too low. Commenters stated that the fluctuating price of natural gas, technological advances, and discoveries of new producing formations throughout the Piceance Basin have contributed to changes in the level of current and future oil and gas development. Further commenters believe that it is not reasonable to assume that the number of future wells will be evenly distributed within each county based on the historic distribution of wells.

Our Response: The DEA acknowledges that the most significant source of uncertainty in the analysis is the level and distribution of future oil and gas development. The economic analysis employs multiple scenarios of future oil and gas activity to account for this uncertainty. The DEA uses the best publicly available information on current and future oil and gas development, while recognizing that the number of actual wells drilled could vary greatly due to changing economic conditions and technological innovations.

Stakeholders in the region indicated that future drilling activity within Mesa and Garfield Counties would be limited to areas within the Piceance and Paradox Basins and, therefore, the DEA restricts its projections to these areas. No better information is publicly available on the future distribution of wells within each county. Section 3.3.1 of the FEA describes the oil and gas industry's concern that the number of gas wells may be underestimated in the DEA.

(20) Comments on economic impacts to Federal, State, and local governments: Multiple commenters stated that the DEA should consider the impact to Federal, State, and local governments of the proposed critical habitat designation. In particular, these commenters asserted that the designation of critical habitat will lead to lost oil and gas development opportunities, which will in turn result in lost royalty and tax revenues to the Federal, State, and local governments.

Our Response: In paragraph 97, the DEA states that “if resource production is curtailed due to conservation efforts, then mineral owners could receive fewer royalties.” However, the DEA goes on to explain that the Service is unlikely to recommend the prohibition of oil and gas activities from within critical habitat areas. Therefore, no loss in revenues to Federal, State, or local governments is anticipated.

(21) Comments relating to oil and gas lease rights on Federal lands: Two commenters express concern that the proposed critical habitat designation may undermine or preempt existing oil and gas lease rights on Federal lands. The commenters state that BLM and the Service should not infringe on lease rights by overly restricting oil and gas activities.

Our Response: The conservation efforts described in the DEA that are likely to be recommended by the Service during section 7 consultation include efforts such as surveying, monitoring, temporary fencing, and weed control. Section 3.4.1 of the DEA describes the likely modifications related to oil and gas development in detail. These conservation efforts will allow for oil and gas development on Federal lands and therefore are not viewed as undermining oil and gas lease rights.

(22) Comments on privately owned surface and mineral rights: One commenter stated that it is inappropriate for the DEA to ignore potential economic impacts associated with the proposed critical habitat designation in areas where both the surface and mineral rights are privately owned.

Our Response: The DEA assumes that a Federal action will not exist for oil and gas development in areas where both the surface and mineral rights are privately owned. Therefore, project proponents are not required to consult with the Service in these areas. Section 3.5 of the DEA acknowledges that projects on privately-owned lands may have a Federal action if they require a permit from the U.S. Army Corps of Engineers under section 402 of the Clean Water Act.

(23) Comments on oil and gas development in *Penstemon debilis* Unit 3: One commenter indicated that the DEA underestimated the number of future well pads to be constructed within proposed Unit 3 for *Penstemon debilis*. The commenter states that the DEA accounts for three future multi-well pads, but in total 15 multi-well pads are estimated.

Our Response: As described in paragraph 105, the DEA assumes that three multi-well pads will be drilled within the currently existing Mount Callahan and Mount Callahan Saddle Colorado Natural Areas within Unit 3 for *Penstemon debilis*. The remaining 12 well pads are located on privately owned property outside of the Natural Areas. The DEA assumes that there will be no Federal nexus for oil and gas development on privately owned land and thus no need for consultation with the Service. Therefore, there will be no impacts associated with the development of the additional 12 well pads outside of the Natural Areas. Paragraph 109 of the FEA explains the assumptions behind which well pads are included in the economic analysis in more detail.

Summary of Changes from Proposed Rule

Modifications to Critical Habitat Unit Boundaries

- Based on additional information which identified unsuitable and discontinuous habitat (Holtrop 2011, pp. 1–2), we refined our designation within *Ipomopsis polyantha* Unit 2 and reduced it from 784 to 564 ac (317 to 228 ha), and reduced Unit 4 from 1,180 to 1,146 ac (478 to 464 ha). These changes were made based on comments from the USFS (Holtrop 2011), as well as site visits made by the Service during the summer of 2011. We notified the public of these changes in our notice of availability for the DEA and draft environmental assessment (77 FR 18157; March 27, 2012).

- We have modified the boundaries of *Penstemon debilis* Unit 3, Mount Callahan. We have modified these boundaries based on the ongoing partnership and conservation efforts between Oxy and CNAP, an existing agreement between Oxy and CNAP to conserve *P. debilis*, and well-formulated plans to increase the scope of this agreement. We are excluding all Oxy lands in this unit. This is further discussed in our Exclusions section and in the Unit description. The Unit was reduced in size from 8,013 to 4,369 ac (3,243 to 1,769 ha). We announced that we were considering these areas for exclusion in the notice of availability for the DEA and draft environmental assessment (77 FR 18157)

- Based on site surveys in 2011 that located more areas with *Phacelia submutica* plants, we have modified the boundaries of *P. submutica* Unit 6, Ashmead

Draw; Unit 7, Baugh Reservoir; and Unit 9, Anderson Gulch (Langton 2010a, spatial data; CNHP 2012b). Unit 6 increased from 1,220 to 1,276 ac (494 to 516 ha); Unit 7 increased from 28 to 430 ac (12 to 174 ha); Unit 9 increased from 310 to 341 ac (122 to 138 ha). We notified the public of these increases in our Notice of Availability for the DEA and draft environmental assessment (77 FR 18157; March 27, 2012).

Modification to Primary Constituent Elements

- We revised the PCE for *Penstemon debilis* regarding habitat for pollinators to accommodate the mud-nesting habits of the wasp, *Pseudomasarid vespoides*, based on information provided by a peer reviewer (Tepedino 2011, p. 1).
- We added to the PCE for *Penstemon debilis* in order to further describe an additional necessary *Penstemon* species (*P. caespitosa*) for support of pollinators and connectivity between sites, based on information provided by a peer reviewer (Tepedino 2011, p. 2).

Clarifications in our Criteria Used to Identify Critical Habitat

- We have added language to clarify our reasoning for designation of pollinator areas.
- We have added language to clarify our designation of unoccupied units for *Penstemon debilis*.

Critical Habitat

Background

Critical habitat is defined in section 3 of the Act as:

(1) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features

(a) Essential to the conservation of the species and

(b) Which may require special management considerations or protection; and

(2) Specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination by the Secretary that such areas are essential for the conservation of the species.

Conservation, as defined under section 3 of the Act, means to use all methods and procedures that are necessary to bring an endangered or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated loss.

Critical habitat receives protection under section 7 of the Act through the requirement that Federal agencies ensure, in consultation with the Service, that any action

they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of critical habitat. The designation of critical habitat does not affect land ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Such designation does not allow the government or public to access private lands. Such designation does not require implementation of restoration, recovery, or enhancement measures by non-Federal landowners. Where a landowner requests Federal agency funding or authorization for an action that may affect a listed species or critical habitat, the consultation requirements of section 7(a)(2) of the Act would apply, but even in the event of a destruction or adverse modification finding, the obligation of the Federal action agency and the landowner is not to restore or recover the species, but to implement reasonable and prudent alternatives to avoid destruction or adverse modification of critical habitat.

Under the first prong of the Act's definition of critical habitat, areas within the geographical area occupied by the species at the time it was listed are included in a critical habitat designation if they contain physical or biological features (1) which are essential to the conservation of the species and (2) which may require special management considerations or protection. For these areas, critical habitat designations identify those physical or biological features that are essential to the conservation of the species (such as space, food, cover, and protected habitat). In identifying those physical and biological features within an area, we focus on the principal biological or physical constituent elements (PCEs such as roost sites, nesting grounds, seasonal wetlands, water quality, tide, soil type) that are essential to the conservation of the species. PCEs are

those specific elements of physical or biological features that provide for a species' life-history processes and are essential to the conservation of the species.

Under the second prong of the Act's definition of critical habitat, we can designate critical habitat in areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. For example, an area currently occupied by the species but that was not occupied at the time of listing may be essential to the conservation of the species and may be included in the critical habitat designation. We designate critical habitat in areas outside the geographical area occupied by a species only when a designation limited to its range would be inadequate to ensure the conservation of the species.

Section 4 of the Act requires that we designate critical habitat on the basis of the best scientific data available. Further, our Policy on Information Standards under the Act (published in the **Federal Register** on July 1, 1994 (59 FR 34271)), the Information Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106-554; H.R. 5658)), and our associated Information Quality Guidelines, provide criteria, establish procedures, and provide guidance to ensure that our decisions are based on the best scientific data available. They require our biologists, to the extent consistent with the Act and with the use of the best scientific data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat.

When we are determining which areas should be designated as critical habitat, our primary source of information is generally the information developed during the listing process for the species. Additional information sources may include the recovery plan for the species, articles in peer-reviewed journals, conservation plans developed by States and counties, scientific status surveys and studies, biological assessments, other unpublished materials, or experts' opinions or personal knowledge.

Habitat is dynamic, and species may move from one area to another over time. We recognize that critical habitat designated at a particular point in time may not include all of the habitat areas that we may later determine are necessary for the recovery of the species. For these reasons, a critical habitat designation does not signal that habitat outside the designated area is unimportant or may not be needed for recovery of the species. Areas that are important to the conservation of the species, both inside and outside the critical habitat designation, will continue to be subject to: (1) conservation actions implemented under section 7(a)(1) of the Act, (2) regulatory protections afforded by the requirement in section 7(a)(2) of the Act for Federal agencies to ensure their actions are not likely to jeopardize the continued existence of any endangered or threatened species, and (3) the prohibitions of section 9 of the Act if actions occurring in these areas may affect the species. Federally funded or permitted projects affecting listed species outside their designated critical habitat areas may still result in jeopardy findings in some cases. These protections and conservation tools will continue to contribute to recovery of these species. Similarly, critical habitat designations made on the basis of the best available information at the time of designation will not control the direction and

substance of future recovery plans, habitat conservation plans (HCPs), or other species conservation planning efforts if new information available at the time of these planning efforts calls for a different outcome.

Physical or Biological Features

In accordance with section 3(5)(A)(i) and 4(b)(1)(A) of the Act and regulations at 50 CFR 424.12, in determining which areas within the geographical area occupied by the species at the time of listing to designate as critical habitat, we consider the physical or biological features essential to the conservation of the species and which may require special management considerations or protection. These include, but are not limited to:

- (1) Space for individual and population growth and for normal behavior;
- (2) Food, water, air, light, minerals, or other nutritional or physiological requirements;
- (3) Cover or shelter;
- (4) Sites for breeding, reproduction, or rearing (or development) of offspring; and
- (5) Habitats that are protected from disturbance or are representative of the historical, geographical, and ecological distributions of a species.

We derive the specific physical or biological features essential for *Ipomopsis polyantha*, *Penstemon debilis*, and *Phacelia submutica* from studies of the species' habitat, ecology, and life-history as described in the **Critical Habitat** section of the proposed rule to designate critical habitat published in the **Federal Register** on July 27,

2011 (76 FR 45078), and in the information presented below. Additional information can be found in the final listing rule published in the **Federal Register** on July 27, 2011 (76 FR 45054).

Ipomopsis polyantha

We have determined that *Ipomopsis polyantha* requires the following physical and biological features:

Space for Individual and Population Growth

Plant Community and Competitive Ability—*Ipomopsis polyantha* is found on barren shales, or in the open montane grassland (primarily *Festuca arizonica* (Arizona fescue)) understory at the edges of open *Pinus ponderosa* (Ponderosa pine), Ponderosa pine and *Juniperus scopulorum* (Rocky Mountain juniper), or *J. osteosperma* (Utah juniper) and *Quercus gambellii* (Gambel oak) plant communities (Anderson 2004, p. 20). Within these plant communities, the plant is found in open or more sparsely vegetated areas where plant cover is less than 5 or 10 percent, although these interspaces can be small within the greater plant community (less than 100 ft² (10 m^{2Bromus inermis (smooth brome) appear to almost totally exclude the species (Anderson 2004, p. 36).}

Complexity in *Ipomopsis polyantha* plant communities is important because pollinator diversity at *I. polyantha* sites is higher at more vegetatively diverse sites (Collins 1995, p. 107). The importance of pollinators for *I. polyantha* is further discussed under “Reproduction” below. Therefore, based on the information above, we identify sparsely vegetated, barren shales, Ponderosa pine margins, Ponderosa pine and juniper, or juniper and oak plant communities to be a physical or biological feature for this plant. Given that much of the area where *I. polyantha* currently exists has already been altered to some degree, these plant communities may be historical. For example, the adjacent forest that would have naturally occurred in *I. polyantha* habitat may have been thinned or removed. In another example, forage species may have been planted in habitat that was once more suitable for *I. polyantha*.

Elevation—Known populations of *Ipomopsis polyantha* are found from 6,750 to 7,775 ft (2,050 to 2,370 m) (Service 2011a, p. 1) on Mancos shale soils (as described below). Because plants have not been identified outside of this elevation band and because growing conditions frequently change across elevation gradients, we have identified elevations from 6,400 to 8,100 ft (1,950 to 2,475 m) to be a physical or biological feature for this plant. We have extended the elevation range 328 ft (100 m) upward and downward in an attempt to provide areas where the plant could migrate, given shifting climates (Callaghan *et al.* 2004, entire; Crimmins *et al.* 2011, entire). We consider this 328 ft (100 m) to be a conservative allowance since studies elsewhere on climate change elevational shifts have found more dramatic changes even in the last century: 95 ft (29 m) upward per decade (Lenoir *et al.* 2008, entire), or an average of 279

ft (85 m) downward since the 1930s (Crimmins *et al.* 2011, entire). We do not have information specific to *I. polyantha* elevational shifts. The above studies were done in different areas, Western Europe and California, and looking at different species. Mancos shale habitats extend into these higher and lower elevations.

Food, Water, Air, Light, Minerals, or Other Nutritional or Physiological Requirements

Soils—*Ipomopsis polyantha* is found on Mancos shale soils from the Upper Cretaceous period within the elevation range described above. These shales comprise a heavy gray clay loam alluvium (loose) soil derived from shale, sandstone, clay, and residuum that is unconsolidated, weathered mineral material that has accumulated as consolidated rock and disintegrated in place (Collins 1995, pp. 2–4). Although Mancos shale soils do not retain soil moisture well, *I. polyantha* seeds grow best when germinated in these soils (Collins 1995, p. 87). We conclude that the soils where *I. polyantha* are found are among the harshest local sites for plant growth because of the lack of vegetation at occupied sites, and because the soils are heavy, droughty, and deficient in nutrients. Species that occupy such sites have been called “stress-tolerators” (Grime 1977, p. 1196). Because *I. polyantha* plants are found only on Mancos shale soils, and because greenhouse trials have found that seedlings grow best in Mancos shale soils, we have identified these Mancos shale soils as a physical or biological feature for this plant.

Climate—Average annual rainfall in Pagosa Springs is 20 inches (in) (51 centimeters (cm)) (Anderson 2004, p. 21). Winters are cold with snow cover commonly

present throughout the winter months. Winter snow is important for preventing severe frost damage to some plants during the winter months (Bannister *et al.* 2005, pp. 250–251) and may be important for *Ipomopsis polyantha*. Freezing temperatures can occur into June and even July, indicating that *I. polyantha* can tolerate frost because it grows and blooms during this time (Anderson 2004, p. 21). May and June, when *I. polyantha* blooms, are, on average, the driest months of the year (Anderson 2004, p. 21; Service 2011b, p. 52). Because *I. polyantha* has evolved in these climatic conditions, we have identified suitable precipitation; cold, dry springs; and winter snow as physical or biological features for this plant. These climatic conditions are influenced, in part, by elevation.

Cover or Shelter

While *Ipomopsis polyantha* seeds and seedlings certainly require “safe sites” for their germination and establishment, these microclimates are too small to be considered or managed here as a physical or biological feature for this plant. We do not understand exactly what physical characteristics constitute a safe site other than that they are locations where the appropriate conditions for seedling germination and growth exist. We believe these features are encompassed in the “Plant Community and Competitive Ability” and “Soils” sections discussed above.

Sites for Breeding, Reproduction, or Rearing (or Development) of Offspring

Reproduction—*Ipomopsis polyantha* sets far less fruit when self-pollinated (2 to 8 percent versus 47 percent fruit set when crossed with pollen from another plant) (Collins 1995, p. 36). Open pollinated (unbagged and not experimentally manipulated) plants set even more fruit (77 percent) (Collins 1995, p. 36). Also, male and female reproductive parts are separated both spatially and temporally (Collins 1995, pp. 34–35). Therefore, we conclude that pollinators are necessary for the long-term successful reproduction and conservation of the plant. Over 30 different insects have been collected visiting *I. polyantha* flowers (Collins 1995, pp. 47–74). The primary pollinators are all bee species; these include the nonnative honeybee *Apis mellifera* (honeybees) and native bees that nest in the ground or twigs including species of *Augochlorella* (a type of Halictid or sweat bee), *Anthophora* (digger bees), *Bombus* (bumblebee), *Dialictus* (another type of Halictid or sweat bee), *Megachile* (leafcutter bees), and *Lasioglossum* (another type of Halictid or sweat bee) (Collins 1995, p. 71). Most of these pollinators are solitary and do not live communally, with the exception of honeybees, which live socially, and bumblebees, which are partially social with seasonal summer colonies. Pollinator diversity was higher at *I. polyantha* sites with more complex plant communities (Collins 1995, p. 107). Because pollinators are necessary for successful reproduction of *I. polyantha*, we have identified pollinators and their associated habitats as an essential biological feature for this plant.

Habitats Protected from Disturbance or Representative of the Historic Geographical and Ecological Distribution of the Species

Disturbance Regime—The native habitat of *Ipomopsis polyantha* has been extensively modified (Anderson 2004, p. 28). The species is considered a ruderal species, which means it is one of the first plant species to colonize disturbed lands. Seeds are not thought to disperse far. Plants are able to colonize nearby disturbed areas quickly. The species is found in light to moderately disturbed areas, such as rills (small, narrow, shallow incisions in topsoil layers caused by erosion by overland flow or surface runoffs), areas that are only occasionally disturbed, or areas with previous disturbances that have been colonized and not subsequently disturbed (i.e., previously cleared areas that have had some time to recover) (Anderson 2004, p. 23; 75 FR 35724-35726). Some of these disturbances are now maintained or created by human activities (such as light grazing or the recolonization of Mancos shale substrate roads that are no longer used) that mimic the constant erosion that occurs on the highly erosive Mancos shale soils and seem to maintain *I. polyantha* at a site. *Ipomopsis polyantha* sites with constant or repetitive disturbance, especially sites with constant heavy grazing or repeated mowing, have been lost (Mayo 2008, pp. 1–2). Fire also may have played a role in maintaining open habitats and disturbances for *I. polyantha* in the past (Anderson 2004, p. 22), as it historically did in all Ponderosa pine forests across the West (Brown and Smith 2000, p. 97).

Interestingly, *Ipomopsis polyantha* individuals at newly disturbed sites were slightly more likely to self-pollinate than were plants in later successional areas (Collins 1995, p. 99), demonstrating that disturbance is important enough to *I. polyantha* that it may influence reproductive success (self-pollinated individuals are less reproductively successful) and possibly genetic diversity (self-pollination leads to lowered genetic

diversity). Managing for an appropriate disturbance type and level can be difficult since we lack research to better quantify these measures. Because *I. polyantha* is found only within areas with light to moderate or discontinuous disturbances, we have identified the disturbance regime to be a physical or biological feature for this plant.

Penstemon debilis

We have determined that *Penstemon debilis* requires the following physical and biological features:

Space for Individual and Population Growth

Plant Community and Competitive Ability—*Penstemon debilis* is found on steep, constantly shifting shale cliffs with little vegetation. The decline or loss of several populations has been attributed to encroaching vegetation; therefore, it is assumed that *P. debilis* is a poor competitor (McMullen 1998, p. 72). The areas where *P. debilis* are found are characterized as “Rocky Mountain cliff and canyon” (NatureServe 2004, p. 10). The plant community where *P. debilis* is found is unique, because instead of being dominated by one or two common species as most plant communities are, it has a high diversity of uncommon species that also are oil shale endemics (McMullen 1998, p. 5). These uncommon endemic species include *Mentzelia rhizomata* (Roan Cliffs blazingstar), *Thalictrum heliophilum* (sun-loving meadowrue), *Astragalus lutosus* (dragon milkvetch), and *Lesquerella parviflora* (Piceance bladderpod), *Penstemon*

osterhoutii (Osterhout beardtongue), and *Festuca dasyclada* (Utah or oil shale fescue) (McMullen 1998, p. 5). More common species include *Holodiscus discolor* (oceanspray), *Penstemon caespitosus* (mat penstemon), *Cercocarpus montanus* (Mountain mahogany), and *Chrysothamnus viscidiflorus* (Yellow rabbitbrush) (O’Kane and Anderson 1987, p. 415; McMullen 1998, p. 5). *Penstemon caespitosus* is especially important because it supports the pollinators of *P. debilis* and may provide connectivity between populations (McMullen 1998, p. 27; Tepedino 2011, p. 3). We consider sparse vegetation (with less than 10 percent plant cover), assembled of other oil shale specific plants, including *P. caespitosus*, and not dominated by any one species, to be a physical or biological feature for this plant.

Elevation—Known populations of *Penstemon debilis* are found from 5,600 to 9,250 ft (1,700 to 2,820 m) in elevation (Service 2011a, p. 3) on specific soils (as described below). Because plants have not been documented outside of this elevation band and because growing conditions frequently change across elevation gradients, we have identified elevations from 5,250 to 9,600 ft (1,600 to 2,920 m) to be a physical or biological feature for this plant. We have extended the elevation range 328 ft (100 m) upward and downward in an attempt to provide areas where the plant could migrate, given shifting climates (Callaghan *et al.* 2004, pp. 418–435; Crimmins *et al.* 2011, pp. 324–327). We consider this 328 ft (100 m) to be a conservative allowance since studies on climate change elevational shifts have found more dramatic changes even in the last century: 95 ft (29 m) upward per decade (Lenoir *et al.* 2008, pp. 1768–1770), or an average of 279 ft (85 m) downward since the 1930s (Crimmins *et al.* 2011, pp. 324–327).

The above studies were done in different areas, Western Europe and California, and looking at different species. We do not have information specific to *P. debilis* elevational shifts; however, oil shale habitats extend into these higher and lower elevations.

Slope—*Penstemon debilis* is generally found only on steep slopes (mean of 37 percent slope) and between cliff bands where the oil shale is constantly shifting and moving downhill (Service 2011a, p. 2). The plant also can be found on relatively flat sites, although nearby habitats are often steep. In general, the plant is found on steep, constantly eroding slopes; therefore, we identify moderate to steep slopes, generally over 15 percent slope, to be a physical or biological feature for this plant.

Food, Water, Air, Light, Minerals, or Other Nutritional or Physiological Requirements

Soils—*Penstemon debilis* is known only from oil shale cliffs on the Roan Plateau escarpment and was previously described as occurring only on the Parachute Creek Member of the Green River Formation (McMullen 1998, p. 57). Utilizing geologic spatial data, our mapping exercises have found that the plant also is found on the Lower Part of the Green River Formation (Tweto 1979, pp. 1,4). Populations are generally located either directly above or below the geologic feature known as the Mahogany Ledge (McMullen 1998, p. 63). All occupied sites are similar in soil morphology (form and structure) and are characterized by a surface layer of small to moderate shale channers (small flagstones) that shift continually due to the steep slopes (McMullen 1998, p. 64). Below the channers is a weakly developed calcareous, sandy to loamy

layer, with 40 to 90 percent coarse material.

Toxic elements in the soil such as arsenic and selenium accumulate in the tissues of *Penstemon debilis* (McMullen 1998, p. 65) and may allow *P. debilis* to grow in areas that are more toxic to other species, thereby reducing plant competition. Toxic elements in the soil vary between populations. In a greenhouse setting, *P. debilis* plants were grown easily in potting soil. Soil may not directly influence *P. debilis*' distribution, but may instead have an indirect effect on the plant's distribution by limiting the establishment of other vegetation (McMullen 1998, p. 67). Soil morphology, rather than soil chemistry, appears to better explain the plant's distribution (McMullen 1998, p. 74). Because the plant is only found on the Parachute Creek Member and Lower Part of the Green River Formation and because of the consistent soil morphology between sites, we are identifying these geologic formations as a physical or biological feature for the plant. We also looked at soil type as discussed below in *Criteria Used to Identify Critical Habitat* but do not include it here as a physical or biological feature because it is a component of the soil characteristics already described.

Climate—The average annual precipitation in the area where *Penstemon debilis* is found ranges from 12 to 18 in (30 to 46 cm) (McMullen 1998, p. 63). Winters are cold (averaging roughly 30 degrees Fahrenheit (°F) (-1 degree Celsius (°C)) with snow staying on the ground in flatter areas), and summers are warmer (averaging roughly 65 °F (18 °C)). Because *P. debilis* has evolved under these climatic conditions, we have identified suitable precipitation and suitable temperatures as physical or biological features for this

plant. These climatic conditions are likely influenced, in part, by elevation.

Cover or Shelter

While *Penstemon* seeds and seedlings certainly require “safe sites” for their germination and establishment, these microclimates are too small to be considered or managed here as a physical or biological feature for this plant. We do not understand exactly what physical characteristics constitute a safe site other than that they are locations where the appropriate conditions for seedling germination and growth exist. We believe these features are encompassed in the “Plant Community and Competitive Ability” and “Soils” sections discussed above.

Sites for Breeding, Reproduction, or Rearing (or Development) of Offspring

Reproduction—*Penstemon debilis* requires insect pollinators for reproduction and is twice as reproductively successful if pollen comes from another plant (McMullen 1998, pp. 25, 43). Over 40 species of pollinators have been collected from *P. debilis*; the primary pollinators include 4 *Osmia* (mason bee) species, *Atoposmia elongata* (a close relative of *Osmia*), several *Bombus* (bumblebee) species, and a native wasp *Pseudomasaris vespoides* (McMullen 1998, pp. 28–29, 89–100). All of these pollinators are either ground or twig nesting or construct mud nests on the underside of rocks or shale. None of these pollinators are rare, nor are they specialists on *P. debilis*, although some of these pollinators, such as *Osmia*, are specialists within the genus *Penstemon*

(McMullen 1998, p. 11). The number and type of pollinators differed between *P. debilis* sites (McMullen 1998, p. 27). Fruit set was not limited by inadequate numbers of pollinators (McMullen 1998, p. 27). Because pollinators are necessary for successful reproduction of *P. debilis*, we have identified pollinators and their associated habitats as a physical or biological feature for this plant.

Habitats Protected from Disturbance or Representative of the Historic Geographical and Ecological Distributions of the Species

Disturbance Regime—*Penstemon debilis* is found on steep oil shale slopes that are constantly shifting. The plant has underground stems (rhizomes) that are an adaptation to this constant shifting (McMullen 1998, p. 58). As the shale shifts downward, the underground stems and clusters of leaves emerge downhill. A single plant may actually appear as many different plants that are connected by these underground stems (McMullen 1998, p. 58). In sites where the soils have stabilized and vegetation has encroached, *P. debilis* has been lost (McMullen 1998, p. 72). Some plants are found on soils that have been disturbed by humans, such as roadsides. Managing for an appropriate disturbance type or level can be difficult since we lack research to better quantify these measures. For these reasons, we consider these unstable and slow to moderate levels of constantly shifting shale slopes to be a physical or biological feature for the species.

Phacelia submutica

We have determined that *Phacelia submutica* requires the following physical and biological features:

Space for Individual and Population Growth

Plant Community and Competitive Ability—Predominant vegetation classifications within the occupied range of *Phacelia submutica* include clay badlands, mixed salt desert scrub, and *Artemisia tridentata* (big sagebrush) shrubland, within the greater *Pinus edulis* (pinyon)—*Juniperus* spp. (juniper) woodlands type (O’Kane 1987, pp. 14–15; Ladyman 2003, pp. 14–16). Within these vegetated areas, *P. submutica* is found on sparsely vegetated barren areas with total plant cover generally less than 10 percent (Burt and Spackman 1995, p. 20). On these barren areas, *P. submutica* can be found alone or in association with other species. Associated plant species at sites occupied by *P. submutica* include: the nonnative *Bromus tectorum* (cheatgrass) and native species *Grindelia fastigiata* (pointed gumweed), *Eriogonum gordonii* (Gordon buckwheat), *Monolepis nuttalliana* (Nuttall povertyweed), and *Oenothera caespitosa* (tufted evening primrose) (Burt and Spackman 1995, p. 20; Ladyman 2003, pp. 15–16). Many of these associated species also are annuals (growing for only 1 year). Because of the harshness (heavy clay soils are difficult for plant growth) and sometimes the steepness of occupied sites, these areas are maintained in an early successional state (Ladyman 2003, p. 18). Therefore, the species found in these habitats are regarded as pioneers that are continually colonizing these bare areas and then dying (O’Kane 1987, p.

15). Pioneer species are often assumed to be poor competitors (Grime 1977, p. 1169). For the reasons discussed above, we identify barren clay badlands with less than 20 percent cover of other plant species to be a physical or biological feature for this plant. We have adjusted the relative plant cover upwards, from less than 10 percent plant cover, to capture the potential plant cover in moist years when other species may be somewhat more abundant.

Elevation—Known populations of *Phacelia submutica* occur within a range of elevations from about 5,000 to 7,150 ft (1,500 to 2,175 m) (Service 2011a, p. 3) on barren clay soils (as described below). Elevation is a key factor in determining the temperature and moisture microclimate of this species. Because plants have not been identified outside of this elevation band and because growing conditions frequently change across elevation gradients, we have identified elevations from 4,600 to 7,450 ft (1,400 to 2,275 m) to be a physical or biological feature for this plant. We have extended the elevation range 328-ft (100-m) upward and downward in an attempt to provide areas where the plant could migrate, given shifting climates (Callaghan *et al.* 2004, pp. 418–435; Crimmins *et al.* 2011, pp. 324–327). We consider this 328-ft (100-m) value to be a conservative allowance since studies on climate change elevational shifts have found more dramatic changes even in the last century: 95 ft (29 m) upward per decade (Lenoir *et al.* 2008, pp. 1768–1770), or an average of 279 ft (85 m) downward since the 1930s (Crimmins *et al.* 2011, pp. 324–327). The above studies were done in different areas, Western Europe and California, and looking at different species. We do not have information specific to *P. submutica* elevational shifts; however, suitable habitat for *P.*

submutica extend into these higher and lower elevations.

Topography (surface shape)—*Phacelia submutica* is found on slopes ranging from almost flat to 42 degrees, with the average around 14 degrees (Service 2011a, p. 3). Plants are generally found on moderately steep slopes, benches, and ridge tops adjacent to valley floors (Ladyman 2003, p. 15). The relative position of *P. submutica* is consistent from site to site; therefore, we recognize appropriate topography (suitable slopes, benches and ridge tops, or moderately steep slopes adjacent to valley floors) as a physical or biological feature for the plant.

Food, Water, Air, Light, Minerals, or Other Nutritional or Physiological Requirements

Soils—*Phacelia submutica* grows only on barren clay soils derived from the Atwell Gulch and Shire members of the Eocene and Paleocene Wasatch geological formation (Donnell 1969, pp. M13–M14; O’Kane 1987, p. 10) within the elevation range described above. The Atwell Gulch member is found below the bluish gray Molina member, and the Shire member is found above the Molina member (Decker *et al.* 2005, p. 3). The plant is found in unique, very small areas (from 10 to 1,000 ft² (1 to 100 m²)), on colorful exposures of chocolate to purplish brown, dark charcoal gray, and tan clay soils (Burt and Spackman 1995, pp. 15, 20; Ladyman 2003, p. 15; Grauch 201, p. 3). We do not fully understand why *P. submutica* is limited to the small areas where it is found, but the plant usually grows on the one unique small spot of shrink-swell clay that shows a slightly different texture and color than the similar surrounding soils (Burt and Spackman

1995, p. 15). Ongoing species-specific soil analyses have found that the alkaline soils (with specific pH ranging from 7 to 8.9) where *P. submutica* are found have higher clay content than nearby unoccupied soils, although there is some overlap (Grauch 2011, p. 4). The shrink-swell action of these clay soils and the cracks that are formed upon drying appear essential to maintenance of the species' seed bank since the cracks capture the seeds and maintain the seed bank on site (O'Kane 1988, p. 462; Ladyman 2003, pp. 16–17). Based on the information above, we consider the small soil inclusions where *P. submutica* is found that are characterized by shrink-swell alkaline clay soils within the Atwell Gulch and Shire members of the Wasatch Formation to represent a physical or biological feature for *P. submutica*.

Climate—Phacelia submutica abundance varies considerably from year to year. In 1 year almost no plants may emerge at a site, and in another year at the same site, hundreds or even thousands of individuals may grow (Burt and Spackman 1995, p. 24). We do not understand what environmental factors (temperature, rainfall, or snowfall) affect these dramatic changes in abundance from 1 year to the next, but it is assumed they are climatic in nature (Burt and Spackman 1995, p. 24). Wetter years seem to produce more individuals (O'Kane 1987, p. 16). However, without the right combination of precipitation and temperature within a short window of time in the spring, the species may produce very few seedlings or mature plants, sometimes for several consecutive years. We believe it is necessary to conserve habitat across the entire range of the species to account for the variation in local weather events, to allow for plants to grow at some sites and not others on an annual basis. Because climatic factors dramatically influence

the number of *P. submutica* individuals that are produced in a given year, we identify climate as a physical or biological feature for the plant; however, we recognize that we are unable to identify exactly what these climatic factors encompass except that the amount of moisture and its timing is critical. Climatic data from four weather stations indicate that average annual precipitation is between 10 to 16 in (25 and 41 cm), with less precipitation generally falling in June (as well as December–February) than other months, and with cold winters (sometimes with snow cover) and warmer summers (Service 2011b, pp. 1–43, 57–72).

Cover or Shelter

While *Phacelia submutica* seeds and seedlings certainly require “safe sites” for their germination and establishment, these microclimates are too small to be considered or managed here as a physical or biological feature for this plant. We do not understand exactly what physical characteristics constitute a safe site other than that they are locations where the appropriate conditions for seedling germination and growth exist. We believe these features are encompassed in the “Plant Community and Competitive Ability” and “Soils” sections discussed above.

Sites for Breeding, Reproduction, or Rearing (or Development) of Offspring

Reproduction and Seed Banks—We do not yet understand the pollination and seed dispersal mechanisms of *Phacelia submutica*. Pollinators have not been observed

visiting the flowers of *P. submutica*. Currently, it is believed that pollinators may not be required for reproduction because of the minute flower size, a lack of obvious pollinators, and because the reproductive parts are hidden within the petals. We also do not understand how seeds are dispersed. Seed banks are established where seeds fall into the cracks of shrink-swell clay (O’Kane 1988, p. 462). We recognize that habitat conducive for successful reproduction is a physical or biological feature for *P. submutica*. However, we do not understand more specifically what features are important for this reproduction. In addition, seed banks are especially important for annual species that may not emerge when climatic conditions are unfavorable (Meyer *et al.* 2005, pp. 15–16, 21; Levine *et al.* 2008, pp. 795–806). For this reason, we identify maintaining the seed bank, through moist years where the plant successfully reproduces at regular intervals as a physical or biological feature for *P. submutica*. We lack further information on how long-lived seeds are in the seed bank and at what intervals the seed bank needs to be replenished to provide specifics but are hopeful that ongoing research will assist in answering some of these questions.

Habitats Protected from Disturbance or Representative of the Historic Geographical and Ecological Distributions of the Species

Disturbance Regime—The steeper clay barrens where *Phacelia submutica* is sometimes found experience some erosion, and the shrinking and swelling of clay soils creates a continuous disturbance (Ladyman 2003, p. 16). *Phacelia submutica* has adapted to these light to moderate disturbances, although occasionally plants are pushed

out of the shrinking or swelling soils and die (O’Kane 1987, p. 20). Clay soils are relatively stable when dry but are extremely vulnerable to disturbances when wet (Rengasmy *et al.* 1984, p. 63). *Phacelia submutica* has evolved with some light natural disturbances, mostly in the form of erosion and the shrink-swell process. Heavy disturbances, and even light disturbances when soils are wet, could impact the species and its seed bank. Soil compaction alters the shrink-swell cycle of the soil, altering hydrologic properties of the soil that may subsequently prevent *P. submutica* germination. These disturbances can include off-highway vehicle (OHV) use, livestock and wild ungulate grazing, and activities associated with oil and gas development. Managing for an appropriate disturbance type or level can be difficult since we lack research to better quantify these measures. For the reasons discussed above, we identify an environment free from moderate to heavy disturbances when soils are dry and free from all disturbances when soils are wet to be a physical or biological feature for *P. submutica*.

Primary Constituent Elements for *Ipomopsis polyantha*, *Penstemon debilis*, and *Phacelia submutica*

Under the Act and its implementing regulations, we are required to identify the physical or biological features essential to the conservation of *Ipomopsis polyantha*, *Penstemon debilis*, and *Phacelia submutica* in areas occupied at the time of listing, focusing on the features’ PCEs. We consider PCEs to be the elements of physical or biological features that provide for a species’ life-history processes and are essential to the conservation of the species.

Ipomopsis polyantha

Based on our current knowledge of the physical or biological features and habitat characteristics required to sustain the species' life-history processes, we determine that the PCEs specific to *Ipomopsis polyantha* are:

(i) *Mancos shale soils.*

(ii) *Elevation and climate.* Elevations from 6,400 to 8,100 ft (1,950 to 2,475 m) and current climatic conditions similar to those that historically occurred around Pagosa Springs, Colorado. Climatic conditions include suitable precipitation; cold, dry springs; and winter snow.

(iii) *Plant Community.*

a. Suitable native plant communities (as described in b. below) with small (less than 100 ft² (10 m²) or larger (several hectares or acres) barren areas with less than 20 percent plant cover in the actual barren areas.

b. Appropriate native plant communities, preferably with plant communities reflective of historical community composition, or altered habitats which still contain components of native plant communities. These plant communities include:

i. Barren shales,

ii. Open montane grassland (primarily Arizona fescue) understory at the edges of open Ponderosa pine, or

iii. Clearings within the Ponderosa pine/Rocky Mountain juniper and Utah juniper/oak communities.

(iv) *Habitat for pollinators.*

a. Pollinator ground and twig nesting areas. Nesting and foraging habitats suitable for a wide array of pollinators and their life history and nesting requirements. A mosaic of native plant communities and habitat types generally would provide for this diversity.

b. Connectivity between areas allowing pollinators to move from one site to the next within each plant population.

c. Availability of other floral resources, such as other flowering plant species that provide nectar and pollen for pollinators. Grass species do not provide resources for pollinators.

d. A 3,280-ft (1,000-m) area beyond occupied habitat to conserve the pollinators essential for plant reproduction.

(v) *Appropriate disturbance regime.*

a. Appropriate disturbance levels—Light to moderate, or intermittent or discontinuous disturbance.

b. Naturally maintained disturbances through soil erosion, or human-maintained disturbances, that can include light grazing, occasional ground clearing, and other disturbances that are not severe or continual.

With this designation of critical habitat, we identify the physical and biological features essential to the conservation of the species through the identification of the PCEs sufficient to support the life-history processes of the species. Two units designated as critical habitat are currently occupied by *Ipomopsis polyantha* and contain the PCEs to

support the life-history needs of the species.

Because two populations do not offer adequate redundancy for the survival and recovery of *Ipomopsis polyantha*, we have determined that unoccupied areas are essential for the conservation of the species. Two additional units designated as critical habitat are currently unoccupied by *I. polyantha*. We consider these units essential for the conservation of the species, as discussed below under “Special Management Considerations.” In addition, we determine that the unoccupied units contain the PCEs necessary to support the life-history needs of the species.

Penstemon debilis

Based on our current knowledge of the physical or biological features and habitat characteristics required to sustain the species’ life-history processes, we determine that the PCEs specific to *Penstemon debilis* are:

(i) *Suitable Soils and Geology.*

- a. Parachute Member and the Lower part of the Green River Formation.
- b. Appropriate soil morphology characterized by a surface layer of small to moderate shale channers (small flagstones) that shift continually due to the steep slopes and below a weakly developed calcareous, sandy to loamy layer with 40 to 90 percent coarse material.

(ii) *Elevation and climate.* Elevations from 5,250 to 9,600 ft (1,600 to 2,920 m). Climatic conditions similar to those of the Mahogany Bench, including suitable precipitation and temperatures.

(iii) *Plant Community.*

a. Barren areas with less than 10 percent plant cover.

b. Presence of other oil shale endemics, which can include: *Mentzelia rhizomata*, *Thalictrum heliophilum*, *Astragalus lutosus*, *Lesquerella parviflora*, *Penstemon osterhoutii*, and *Festuca dasyclada*.

c. Presence of *Penstemon caespitosa* for support of pollinators and connectivity between sites.

(iv) *Habitat for pollinators.*

a. Pollinator ground, twig, and mud nesting areas. Nesting and foraging habitats suitable for a wide array of pollinators and their life-history and nesting requirements. A mosaic of native plant communities and habitat types generally would provide for this diversity (see *Plant Community* above). These habitats can include areas outside of the soils identified in *Suitable Soils and Geology*.

b. Connectivity between areas allowing pollinators to move from one population to the next within units.

c. Availability of other floral resources, such as other flowering plant species that provide nectar and pollen for pollinators. Grass species do not provide resources for pollinators.

d. A 3,280-ft (1,000-m) area beyond occupied habitat to conserve the pollinators essential for plant reproduction.

(v) *High levels of natural disturbance.*

a. Very little or no soil formation.

b. Slow to moderate, but constant, downward motion of the oil shale that maintains the habitat in an early successional state.

With this designation of critical habitat, we identify the physical and biological features essential to the conservation of the species through the identification of the PCEs sufficient to support the life-history processes of the species. Two units designated as critical habitat are currently occupied by *Penstemon debilis* and contain the PCEs to support the life-history needs of the species. Two additional units designated as critical habitat are currently unoccupied by *P. debilis*. Currently occupied areas do not adequately provide for the conservation of the species, because of a lack of redundancy. We consider these units essential for the conservation of the species, as discussed below under “Special Management Considerations.” In addition, we determine the unoccupied units contain the PCEs necessary to support the life-history needs of the species.

Phacelia submutica

Based on our current knowledge of the physical or biological features and habitat characteristics required to sustain the species’ life-history processes, we determine that the PCEs specific to *Phacelia submutica* are:

(i) *Suitable Soils and Geology.*

a. Atwell Gulch and Shire members of the Wasatch formation.

b. Within these larger formations, small areas (from 10 to 1,000 ft² (1 to 100 m²)) on colorful exposures of chocolate to purplish brown, light to dark charcoal gray, and tan clay soils. These small areas are slightly different in texture and color than the similar surrounding soils. Occupied sites are characterized by alkaline (pH range from 7 to 8.9) soils with higher clay content than similar nearby unoccupied soils.

c. Clay soils that shrink and swell dramatically upon drying and wetting and are likely important in the maintenance of the seed bank.

(ii) *Topography*. Moderately steep slopes, benches, and ridge tops adjacent to valley floors. Occupied slopes range from 2 to 42 degrees with an average of 14 degrees.

(iii) *Elevation and climate*.

a. Elevations from 4,600 to 7,450 ft (1,400 to 2,275 m).

b. Climatic conditions similar to those around DeBeque, Colorado, including suitable precipitation and temperatures. Annual fluctuations in moisture (and probably temperature) greatly influences the number of *Phacelia submutica* individuals that grow in a given year and are thus able to set seed and replenish the seed bank.

(iv) *Plant Community*.

a. Small (from 10 to 1,000 ft² (1 to 100 m²)) barren areas with less than 20 percent plant cover in the actual barren areas.

b. Presence of appropriate associated species that can include (but are not limited to) the natives *Grindelia fastigiata*, *Eriogonum gordonii*, *Monolepis nuttalliana*, and *Oenothera caespitosa*. Some presence of, or even domination by, invasive nonnative species, such as *Bromus tectorum*, may occur, as *Phacelia submutica* may still be found there.

c. Appropriate plant communities within the greater pinyon–juniper woodlands that include:

- i. Clay badlands within the mixed salt desert scrub, or
- ii. Clay badlands within big sagebrush shrublands.

(v) *Maintenance of the Seed Bank and Appropriate Disturbance Levels.*

a. Within suitable soil and geologies, undisturbed areas where seed banks are left undamaged.

b. Areas with light disturbance when dry and no disturbance when wet.

Phacelia submutica has evolved with some light natural disturbances, including erosional and shrink-swell processes. However, human disturbances that are either heavy or light when soils are wet could impact the species and its seed bank. Because we do not understand how the seed bank may respond to disturbances, more heavily disturbed areas should be evaluated, over the course of several years, for the species' presence.

With this designation of critical habitat, we identify the physical and biological features essential to the conservation of the species through the identification of the PCEs sufficient to support the life-history processes of the species. All units and subunits designated as critical habitat are currently occupied by *Phacelia submutica* and contain the PCEs sufficient to support the life-history needs of the species.

Special Management Considerations or Protections

When designating critical habitat, we assess whether the specific areas within the geographical area occupied by the species at the time of listing contain features that are essential to the conservation of the species and which may require special management considerations or protection. All areas designated as critical habitat will require some level of management to address the current and future threats to the physical and biological features essential to the conservation of the three plants. In all units, special management will be required to ensure that the habitat is able to provide for the growth and reproduction of the species.

A detailed discussion of threats to *Ipomopsis polyantha*, *Penstemon debilis*, and *Phacelia submutica* and their habitat can be found in the final listing rule (76 FR 45054). The primary threats impacting the physical and biological features essential to the conservation of *I. polyantha*, *P. debilis*, and *P. submutica* that may require special management considerations or protection within CHUs include, but are not limited to, the following:

Ipomopsis polyantha

The features essential to the conservation of this species (plant community and competitive ability, elevation, soils, climate, reproduction, and disturbance regime) may require special management considerations or protection to reduce threats. *Ipomopsis polyantha*'s highly restricted soil requirements and geographic range make it particularly susceptible to extinction at any time from commercial, municipal, and residential

development; associated road and utility improvements and maintenance; heavy livestock use; inadequacy of existing regulatory mechanisms; fragmented habitat; and prolonged drought (76 FR 45054). Over 86 percent of the species' occupied habitat is on private land with no limits on development (Service 2011c, p. 2).

Special management considerations or protections are required within critical habitat areas to address these threats. Management activities that could ameliorate these threats include (but are not limited to): introducing new *Ipomopsis polyantha* populations; establishing permanent conservation easements or acquiring land to protect the species on private lands; developing zoning regulations that could serve to protect the species; establishing conservation agreements on private and Federal lands to identify and reduce threats to the species and its features; eliminating the use of smooth brome and other competitive species in areas occupied by the species; promoting and encouraging habitat restoration; developing other regulatory mechanisms to further protect the species; placing roads and utility lines away from the species; minimizing heavy use of habitat by livestock; and minimizing habitat fragmentation.

These management activities would protect the PCEs for the species by preventing the loss of habitat and individuals, maintaining or restoring plant communities and natural levels of competition, protecting the plant's reproduction by protecting its pollinators, and managing for appropriate levels of disturbance.

Penstemon debilis

The features essential to the conservation of this species (plant community and competitive ability, elevation, slope, soils, climate, reproduction, and disturbance regime) may require special management considerations or protection to reduce threats. Extremely low numbers and a highly restricted geographic range make *Penstemon debilis* particularly susceptible to becoming endangered in the foreseeable future. Threats to the species and its habitat include energy development, road maintenance, and inadequacy of existing regulatory mechanisms (76 FR 45054).

Special management considerations or protections are required within critical habitat areas to address these threats. Management activities that could ameliorate these threats include (but are not limited to): The introduction of new *Penstemon debilis* populations; the establishment of permanent conservation easements or the acquisition of land to protect the species on private lands; the continuation and adequate management of *P. debilis* through the CNA Agreement with Oxy (see **Exclusions** section below); regulations and/or agreements that balance conservation with energy development in areas that would affect the species and its pollinators; the designation of protected areas with specific provisions and protections for the plant; the elimination or avoidance of activities that alter the morphology and status of the shale slopes; and avoidance of placing roads in habitats that would affect the plant or its pollinators.

These management activities would protect the PCEs for the species by preventing the loss of habitat and individuals, maintaining or restoring plant communities

and natural levels of competition, protecting the plant's reproduction by protecting its pollinators, and managing for appropriate levels and types of disturbance.

Phacelia submutica

The features essential to the conservation of this species (plant community and competitive ability, elevation, topography, soils, climate, reproduction and seed bank, and disturbance regime) may require special management considerations or protection to reduce threats. Specifically, the clay soils on which *Phacelia submutica* are found are relatively stable when dry but are extremely vulnerable to disturbances when wet. The current range of *P. submutica* is subject to human-caused modifications from natural gas exploration and production with associated expansion of pipelines, roads, and utilities; development within the Westwide Energy Corridor; increased access to the habitat by OHVs; soil and seed disturbance by livestock and other human-caused disturbances; nonnative invasive species including *Bromus tectorum* and *Halogeton glomeratus* (halogeton); and inadequacy of existing regulatory mechanisms (76 FR 45054).

Special management considerations or protections are required within critical habitat areas to address these threats. Management activities that could ameliorate these threats include (but are not limited to): Development of regulations and agreements to balance conservation with energy development and minimize its effects in areas where the species resides; the establishment of additional protection areas that provide greater protections for the species; minimization of OHV use; placement of roads and utility

lines away from the species and its habitat; minimization of livestock use or other human-caused disturbances that disturb the soil or seeds; and the minimization of habitat fragmentation.

These management activities would protect the PCEs for the species by preventing the loss of habitat and individuals, protecting the plant's habitat and soils, and managing for appropriate levels of disturbance.

Criteria Used To Identify Critical Habitat

As required by section 4(b)(2) of the Act, we used the best scientific data available to designate critical habitat. We reviewed available information pertaining to the habitat requirements of this species. In accordance with the Act and its implementing regulation at 50 CFR 424.12(e), we considered whether designating additional areas—outside those currently occupied as well as those occupied at the time of listing—are necessary to ensure the conservation of the species. We are designating critical habitat in areas within the geographical area occupied by *Ipomopsis polyantha*, *Penstemon debilis*, and *Phacelia submutica* at the time of listing in 2011. We also are designating specific areas outside the geographical area occupied by *I. polyantha* and *P. debilis* at the time of listing because we have determined that such areas are essential for the conservation of the species. All units are designated based on sufficient elements of physical and biological features being present to support *Ipomopsis polyantha*, *Penstemon debilis*, and *Phacelia submutica* life-history processes.

Small populations and plant species with limited distributions, like those of *Ipomopsis polyantha* and *Penstemon debilis*, are vulnerable to relatively minor environmental disturbances (Given 1994, pp. 66–76; Frankham 2005, pp. 135–136), and are subject to the loss of genetic diversity from genetic drift, the random loss of genes, and inbreeding (Ellstrand and Elam 1993, pp. 217–237; Leimu *et al.* 2006, pp. 942–952). Plant populations with lowered genetic diversity are more prone to local extinction (Barrett and Kohn 1991, pp. 4, 28). Smaller plant populations generally have lower genetic diversity, and lower genetic diversity may in turn lead to even smaller populations by decreasing the species' ability to adapt, thereby increasing the probability of population extinction (Newman and Pilson 1997, p. 360; Palstra and Ruzzante 2008, pp. 3428–3447). Because of the dangers associated with small populations or limited distributions, the recovery of many rare plant species includes the creation of new sites or reintroductions to ameliorate these effects.

Genetic analysis of *Ipomopsis polyantha* has not been conducted; therefore, we do not understand the genetic diversity of this species. Given the species' limited extent and presence in only two populations, we expect the species may be suffering from low genetic diversity, or could in the future.

Genetic research on *Penstemon debilis*, based on neutral genetic markers, has found that there is more genetic diversity in larger populations than smaller populations, that the northeastern populations are more closely related to one another than to the

southwestern populations, that inbreeding is common within each population, and that genetic diversity for the species is low when compared with other species of plants with similar life-history traits (Wolfe 2010, p. 1). The plant is partially clonal, which likely explains the lowered genetic diversity and further reduces the actual population size. Small population sizes with few individuals are a problem for this species, as supported by this research.

When designating critical habitat for a species, we consider future recovery efforts and conservation of the species. Realizing that the current occupied habitat is not enough for the conservation and recovery of *Ipomopsis polyantha* and *Penstemon debilis*, we worked with species' experts to identify unoccupied habitat essential for the conservation of these two species. The justification for why unoccupied habitat is essential to the conservation of these species and methodology used to identify the best unoccupied areas for consideration for inclusion is described below.

Habitat fragmentation can have negative effects on biological populations, especially rare plants, and affect survival and recovery (Aguilar *et al.* 2006, pp. 968–980; Aguilar *et al.* 2008, pp. 5177–5188; Potts *et al.* 2010, pp. 345–352). Fragments are often not of sufficient size to support the natural diversity prevalent in an area, and thus exhibit a decline in biodiversity (Fahrig 2003, pp. 487–515). Fragmentation effects are especially prevalent in systems where multiple generations have elapsed since the fragmentation occurred (Aguilar *et al.* 2008, p. 5177). Habitat fragmentation has been shown to disrupt plant-pollinator interactions and predator-prey interactions (Steffan-

Dewenter and Tschardt 1999, p. 432–440; Aguilar *et al.* 2006, pp. 968–980; Eckert *et al.* 2010, pp. 35–43), alter seed germination percentages (Menges 1991, pp. 158–164), affect recruitment (Santos and Telleria 1997, pp. 181–187; Quesada *et al.* 2003, pp. 400–406), and result in lowered fruit set (Burd 1994, pp. 83–139; Cunningham 2000, pp. 1149–1152; Eckert *et al.* 2010, p. 38).

In general, habitat fragmentation causes habitat loss, habitat degradation, habitat isolation, changes in species composition, changes in species interactions, increased edge effects, and reduced habitat connectivity (Fahrig 2003, pp. 487–515; Fisher and Lindenmayer 2007, pp. 265–280). These effects are more prevalent in arid ecosystems with low native vegetation cover (Fisher and Lindenmayer 2007, p. 272). Habitat fragments are often functionally smaller than they appear because edge effects (such as increased nonnative invasive species or wind speeds) impact the available habitat within the fragment (Lienert and Fischer 2003, p. 597).

Shaffer and Stein (2000) identify a methodology for conserving imperiled species known as the three Rs: representation, resiliency, and redundancy. Representation, or preserving some of everything, means conserving not just a species but its associated plant communities, pollinators, and pollinator habitats. Resiliency and redundancy ensure there is enough of a species so it can survive into the future. Resiliency means ensuring that the habitat is adequate for a species and its representative components. Redundancy ensures an adequate number of sites and individuals. This methodology has been widely accepted as a reasonable conservation strategy (Tear *et al.* 2005, p. 841).

We have addressed representation through our PCEs for each species (as discussed above) and by providing habitat for pollinators of *Ipomopsis polyantha* and *Penstemon debilis* (as discussed further under “*Ipomopsis polyantha*” below). For *Phacelia submutica*, we believe that the occupied habitat provides for both resiliency and redundancy and that with conservation of these areas, the species should be conserved and sustained into the future. For *I. polyantha*, there are only two known populations, both with few or no protections in place (low resiliency). For adequate resiliency, we believe it is necessary for the conservation and recovery of *I. polyantha* that additional populations with further protections be established. Therefore, we have identified two unoccupied areas as designated CHUs for *I. polyantha*. For *P. debilis*, there are only approximately 4,000 known individuals (low redundancy), all within 2 concentrated areas (low resiliency). For adequate redundancy and resiliency, we believe it is necessary for conservation and recovery that additional populations of *P. debilis* be established. Therefore, we have identified two unoccupied areas as designated CHUs for *P. debilis*.

Ipomopsis polyantha

In accordance with the Act and its implementing regulation at 50 CFR 424.12(e), we consider whether designating additional areas—outside those currently occupied as well as those occupied at the time of listing—are necessary to ensure the conservation of the species. For *Ipomopsis polyantha*, we are designating critical habitat in areas within the geographical area occupied by the species at the time of listing in 2011. We also are

designating specific areas outside the geographical area occupied by the species at the time of listing, because such areas are essential for the conservation of the species.

Occupied critical habitat was identified by delineating all known sites within a population (CNHP 2012a, pp. 1, 6, 11), placing a minimum convex polygon around the perimeter of all sites, and then adding an additional 3,280-ft (1,000-m) area for pollinator habitat. The distance that pollinators can travel is significant to plants including *Ipomopsis polyantha* because pollen transfer and seed dispersal are the only mechanisms for genetic exchange. Both pollen and seed dispersal can vary widely by plant species (Ellstrand 2003, p. 1164). In general, pollinators will focus on small areas where floral resources are abundant; however, occasional longer distance pollination will occur, albeit infrequently. No research has been conducted on flight distances of *I. polyantha*'s pollinators. Therefore, we rely on general pollinator travel distances described in the literature.

Typically, pollinators fly distances that are in relation to their body sizes, with smaller pollinators flying shorter distances than larger pollinators (Greenleaf *et al.* 2007, pp. 589–596). Pollinators will, if possible, forage close to the nest. If a pollinator can fly long distances, pollen transfer also is possible across these distances. The largest pollinators of *Ipomopsis polyantha* are bumblebee species (*Bombus* spp.). In one study, the buff-tailed bumblebee (*Bombus terrestris*) flew a maximum distance of 2,037 ft (621 m) (Osborne *et al.* 1999, pp. 524–526). The bumblebee-pollinated plant species, *Scabiosa columbaria* (dove pincushions), experienced decreased pollen flow at a patch

isolation distance of 82 ft (25 m), and little to no pollen transfer when patches were isolated by 656 ft (200 m) (Velterop 2000, p. 65). In the Colorado subalpine, most marked bumblebees were found within 328 ft (100 m), and never further than 3,280 ft (1,000 m) from the location where they were originally located (Elliott 2009, p. 752). In mixed farmland, two different bumblebees foraged at distances less than 1,024 and 2,050 ft (312 and 625 m), respectively (Darvill *et al.* 2004, pp. 471–478). Another study found that buff-tailed bumblebee workers (resource collectors) were recaptured while foraging on super-abundant resources at distances of 1.1 mi (1.75 km) from the nest (Walther-Hellwig and Frankl 2000, p. 303).

Foraging studies can be biased in that long-distance foraging bouts occur less frequently and so are less likely to be detected in experiments (Darvill *et al.* 2004, p. 476). Models have predicted that bumblebees can forage from 3 to 6 mi (5 to 10 km) and still return with a net profit in energy (Dukas and Edelman-Keshet 1998, p. 127; Cresswell *et al.* 2000, p. 251). The maximum distance from which bumblebees have returned in homing experiments is almost 6 mi (10 km) (Goulson and Stout 2001, p. 105-111).

These studies suggest variability in the distances over which pollen transfer may occur and over which bumblebee species can travel. *Ipomopsis polyantha* sites within populations can be separated by more than 3,280 ft (1,000 m), making conservation of these large pollinators especially important for genetic exchange between sites. In the interest of protecting *I. polyantha*'s pollinators, we have identified a 3,280-ft (1,000-m)

wide pollinator area. This area has the added benefit of providing more habitat for *I. polyantha* potential expansion in the future. Pollinators generally need the following: (1) A diversity of native plants whose blooming times overlap to provide flowers for foraging throughout the seasons; (2) nesting and egg-laying sites, with appropriate nesting materials; (3) sheltered, undisturbed places for hibernation and overwintering; and (4) a landscape free of poisonous chemicals (Shepherd *et al.* 2003, pp. 49–50). Encompassing a diversity of habitats and vegetation types, which our pollinator area does, will encourage a diversity of pollinators.

A recovery plan has not yet been written for *Ipomopsis polyantha*. However, as described above, with only two known populations of *I. polyantha*, both of which are located largely on private lands with few protections, we expect that future recovery efforts will include efforts to improve resiliency by increasing the number of populations; therefore, we also are designating unoccupied habitat. We determined that not all potential habitat (Mancos shale soil layer near the town of Pagosa Springs) for *I. polyantha* was essential to the conservation of the species. In keeping with section 3(5)(C) of the Act, which states that critical habitat may not include the entire geographical area which can be occupied by the species, except in certain circumstances determined by the Secretary, we have designated only a portion of the potential habitat for the species.

To assist us in determining which specific unoccupied areas may be essential to the conservation of the species and considered for inclusion, we not only evaluated the

biological contribution of an area, but also evaluated the conservation potential of the area through the overlay of a designation of critical habitat. While we recognize that there is an education value to designating an area as critical habitat, the more prevailing benefit is consultation under section 7 of the Act on activities that may affect critical habitat on Federal lands or where a Federal action may exist. Thus, in evaluating the potential conservation value of an unoccupied area for inclusion in critical habitat, we first focused on lands that are biologically important to the species and then considered which of those lands were under Federal ownership or likely to have a Federal action occur on them. If the inclusion of areas that met those criteria were not sufficient to conserve the species, we then evaluated other specific areas on private lands that were not likely to have a Federal action on them.

Unoccupied critical habitat was identified by overlaying the Mancos shale soil layer around Pagosa Springs with Federal ownership (Service 2011d, p. 1). As little overlap occurred where Mancos shale soils and Federal lands intersected with habitat supporting the appropriate plant communities for future *Ipomopsis polyantha* introductions, habitat is somewhat limited in suitable areas. Upon discussions with local species and area experts as well as land managers, we identified two areas on USFS lands as potential recovery or introduction areas for *I. polyantha*. These two areas include the O'Neal Hill Special Botanical Area and Eight Mile Mesa, both within the San Juan National Forest. These areas contain the PCEs sufficient to support the life-history needs of the species, including Mancos shale soils and appropriate plant communities, and

when added to the occupied areas would provide sufficient resiliency, redundancy, and representation for the conservation of the species.

We delineated the CHU boundaries for *Ipomopsis polyantha* using the following steps:

(1) In determining what areas were occupied by *Ipomopsis polyantha*, we used data on all known populations collected by the CNHP (O’Kane 1985, maps; Lyon 2002, p. 3; Lyon 2005, pp. 1–7; CNHP 2008, pp. 1–8; CNHP 2012b, pp. 1–7), BLM (Brinton 2010, pp. 1–7), USFS (Brinton 2010, pp. 1–7), the Service (Mayo 2005, pp. 1–35; Mayo and Glenne 2009, spatial data; Langton 2010b, spatial data), research efforts (Collins 1995, maps), and consulting firms (JGB Consulting 2005, pp. 2–7; Ecosphere Environmental Services 2012, pp. 1–28) to map specific locations of *I. polyantha*. These data were input into ArcMap 9.3.1 and 10. Based on criteria developed by the CNHP, sites were classified into discrete populations if they were within 2 mi (3 km) of each other and were not separated by unsuitable habitat (CNHP 2012a, p. 1).

(2) For currently occupied CHUs, we delineated critical habitat areas by creating minimum convex polygons around each population and adding a 3,280-ft (1,000-m) wide area for pollinator habitat as previously described.

(3) For currently unoccupied CHUs, we identified two areas where the Mancos shale (Tweto 1979, spatial data) intersected with Federal ownership (COMaP version 8 - Theobald *et al.* 2010, spatial data). We delineated these areas by following the Federal land management boundary and identifying suitable habitats based on species and area experts’ input and aerial imagery. Our reasoning for identifying unoccupied units is

described above.

We are designating as critical habitat lands that we have determined are occupied at the time of listing and contain sufficient physical or biological features to support life-history processes essential for the conservation of *Ipomopsis polyantha* and lands outside of the geographical area occupied at the time of listing that we have determined are essential for the conservation of *I. polyantha*.

We designated four units based on sufficient elements of physical or biological features being present to support *I. polyantha* life processes. All units contain all of the identified elements of physical or biological features and supported multiple life processes.

Penstemon debilis

In accordance with the Act and its implementing regulations at 50 CFR 424.12(e), we consider whether designating additional areas—outside those currently occupied as well as those occupied at the time of listing—are necessary to ensure the conservation of the species. We are designating critical habitat in areas within the geographical area occupied by the species at the time of listing in 2011. We also are designating specific areas outside the geographical area occupied by the species at the time of listing, because such areas are essential for the conservation of the species.

Occupied critical habitat was identified by delineating all known sites within a population (CNHP 2012a, p. 5), placing a minimum convex polygon around the perimeter of all these sites, and then adding a 3,280-ft (1,000-m) area for pollinator habitat as previously described for *Ipomopsis polyantha*. Like *I. polyantha*, *Penstemon debilis*' largest pollinators are the bumblebee species (*Bombus* sp.) (discussed above under *I. polyantha*).

To allow for future seed dispersal and population growth, occupied areas were expanded into adjacent habitats containing the PCEs. This roughly doubled the size of these occupied units. In doing this, we also have provided more potential habitat for future recovery and introduction efforts, and given the difficulties of surveying cliff areas, have allowed for the possibility that there are more populations of *Penstemon debilis* than we know.

A recovery plan has not yet been written for *Penstemon debilis*. With only 4,100 known individuals of *P. debilis* concentrated in 2 areas, we conclude that future recovery efforts will necessitate actions to improve redundancy by increasing the number of individuals and sites. Therefore, we also are designating unoccupied habitat as critical habitat. Unoccupied critical habitat was delineated by identifying potential habitat on large contiguous areas of Federal ownership (see Number 3 below) (Service 2011d, p. 2). We determined that not all potential habitat (as defined below) for *P. debilis* was essential to the conservation of the species, and in keeping with section 3(5)(C) of the Act, which states that critical habitat may not include the entire geographical area which

can be occupied by the species, except in certain circumstances determined by the Secretary, we have designated only a portion of the potential habitat for the species.

When we overlaid our rough suitable habitat layer (described in further detail in step 3 below) for *Penstemon debilis* with private and Federal lands, we mapped 16,862 ac (6,824 ha) of suitable habitat, 68 percent on private lands and 32 percent on Federal (BLM) lands with a spotty distribution measuring roughly 39 mi (63 km) from east to west and 17 mi (28 km) from north to south. Of the 5,323 ac (2,154 ha) on BLM lands, 1,515 ac (613 ha) fell within occupied units (Units 3 and 4), leaving 3,808 ac (1,541 ha) of suitable habitat (23 percent of the total suitable habitat) on BLM lands. In looking at the remaining BLM ownership, two obvious large patches of suitable habitat were evident, which is how we identified the unoccupied units. These unoccupied units contain 1,358 ac (550 ha) of suitable habitat, representing 40 percent of the remaining suitable habitat acreage on BLM lands. Additional suitable habitat on BLM lands was much more fragmented and spotty, not comprising the same contiguous blocks as the unoccupied units, and thus, of lower value for recovery; these areas were not included in the critical habitat designation. The four CHUs span an area roughly 30 mi (49 km) from east to west and 11 mi (17 km) from north to south, representing a good portion of the range of the suitable habitat we mapped.

To assist us in determining which specific areas may be essential to the conservation of the species and considered for inclusion here, we not only evaluated the biological contribution of an area, but also evaluated the conservation potential of the

area through the overlay of a designation of critical habitat. While we recognize that there is an education value to designating an area as critical habitat, the more prevailing benefit is consultation under section 7 of the Act on activities that may affect critical habitat on Federal lands or where a Federal action may exist. Thus, in evaluating the potential conservation value of an unoccupied area for inclusion in critical habitat, we first focused on lands that are biologically important to the species and then considered which of those lands were under Federal ownership or likely to have a Federal action occur on them. If the inclusion of areas that met those criteria were not sufficient to conserve the species, we then evaluated other specific areas on private lands that were not likely to have a Federal action on them. Upon discussions with local species and area experts, as well as land managers, we identified two areas on BLM lands as potential recovery or introduction areas for *Penstemon debilis*. These two areas include Brush Mountain and Cow Ridge, both managed by BLM. These areas contain the PCEs sufficient to support the life-history needs of the species, including oil shale soils and appropriate plant communities.

We delineated the CHU boundaries for *Penstemon debilis* using the following steps:

(1) In determining what areas were occupied by *Penstemon debilis*, we used data for all the known populations collected by the CNHP (O’Kane and Anderson 1986, p. 1; Spackman *et al.* 1997, p. 108; CNHP 2012b, pp. 8–19, spatial data), the BLM (Scheck and Kohls 1997, p. 3; DeYoung 2010a, spatial data; DeYoung 2010b; DeYoung *et al.* 2010, p. 1), CNAP (CNAP 2006, spatial data), the Service (Ewing 2009, spatial data),

and a consulting firm (Graham 2009, spatial data) to map populations using ArcMap 9.3.1 and 10. These locations were classified into discrete element occurrences (populations) by CNHP (CNHP 2012a, p. 6).

(2) We delineated preliminary units by creating minimum convex polygons around each population and adding a 3,280-ft (1,000-m) wide area for pollinator habitat as described above.

(3) We then identified potential habitat (Service 2011d, p. 2) in ArcMap 9.3.1 by intersecting the following criteria: the Parachute Creek Member and the Lower part of the Green River Formation geological formations (Tweto 1979, spatial data), with elevations between 6,561 to 9,350 ft (2,000 and 2,850 m), with suitable soil types that included five soil series (Irigul-Starman channery loams, Happle-Rock outcrop association, Rock outcrop-Torriorthents complex, Torriorthents-Camborthids-Rock outcrop complex, and Tosca channery loam), which represented 89 percent of all known *Penstemon debilis* sites (Natural Resource Conservation Service 2008, spatial data; Service 2011a, p. 2), and with the “Rocky Mountain cliff and canyon” landcover classification (NatureServe 2004, spatial data). We chose the “Rocky Mountain cliff and canyon” landcover classification because 75 percent of all the known *P. debilis* locations fall within this mapping unit (and all sites outside are either on artificially created habitats or are directly below this classification where both oil shale substrate and *P. debilis* seed dispersal down drainage constantly occurs). We did not include the lower elevations currently occupied by *P. debilis* in our minimum convex polygon edges that we used for delineating pollinator habitat (step 2) or in our potential habitat analysis (step 3), because there are few plants in these more ephemeral wash-out habitat types and because these

unusual habitat types do not seem to represent the species' typical habitat requirements. However, it should be noted that these unusual sites are still included within the boundaries of Unit 3 (as delineated by step 2).

(4) From this potential habitat analysis (as delineated in step 3), we took the two continuous bands of potential habitat that include the areas where *Penstemon debilis* is currently found and added them to our existing polygons, including pollinator habitat (as delineated in step 2). We did this by again creating a minimum convex polygon. This condensed all known populations into two currently occupied CHUs (Units 3 and 4).

(5) For currently unoccupied CHUs, we identified two areas where our potential habitat was intersected with Federal ownership (COMaP version 8 - Theobald *et al.* 2010, spatial data). Our reasoning for identifying unoccupied units is described above.

We are designating as critical habitat lands that we have determined were occupied at the time of listing and contain sufficient physical or biological features to support life-history processes essential for the conservation of *Penstemon debilis*, and lands outside of the geographical area occupied at the time of listing that we have determined are essential for the conservation of *P. debilis*.

Four units were designated based on sufficient elements of physical or biological features being present to support *P. debilis* life processes. All units contained all of the identified elements of physical or biological features and supported multiple life processes.

Phacelia submutica

In accordance with the Act and its implementing regulation at 50 CFR 424.12(e), we consider whether designating additional areas—outside those currently occupied as well as those occupied at the time of listing—are necessary to ensure the conservation of the species. We are not designating any areas outside the geographical area occupied by the species because occupied areas are sufficient for the conservation of the species.

Occupied critical habitat was identified by delineating all known sites within a population (CNHP 2012a, p. 11), and placing a minimum convex polygon around the perimeter of all these sites. We then added a 328-ft (100-m) wide area to account for indirect effects from factors such as edge effects from roads, nonnative species, dust impacts, and others (as discussed above).

Phacelia submutica has a large enough range (sufficient representation and resiliency), enough populations (sufficient redundancy), and enough individuals (sufficient redundancy) that we felt that the occupied habitat alone would be adequate for the future conservation and recovery of the species. Therefore, no unoccupied habitat was included in this critical habitat designation.

We delineated the CHU boundaries for *Phacelia submutica* using the following steps:

- (1) In determining what areas were occupied by *Phacelia submutica*, we used data

on all known locations collected by CNHP (CNHP 1982, pp. 1–17; Burt and Carston 1995, pp. 10–14; Burt and Spackman 1995, p. 3; Spackman and Fayette 1996, p. 5; Lyon 2008, spatial data; Lyon and Huggins 2009a, p. 3; Lyon and Huggins 2009b, p. 3; Lyon 2010, spatial data; CNHP 2012b, spatial data), the Colorado Native Plant Society (Colorado Native Plant Society 1982, pp. 1–9), the BLM (DeYoung 2010a, spatial data; DeYoung 2010b, spatial data; Diekman 2010, spatial data), USFS (Johnston 2010, spatial data; Potter 2010, spatial data; Proctor 2010, spatial data; Kirkpatrick 2011, p. 1), CNAP (Wenger 2008; 2009; 2010, spatial data), the Service (Ewing and Glenne 2009, spatial data; Langton 2010a, spatial data; Langton 2011, spatial data), and consulting firms (Ellis and Hackney 1982, pp. 7–8; Klish 2004, pp. 1–2; WestWater Engineering 2007b, spatial data; WestWater Engineering 2007a, spatial data; Westwater Engineering 2010, maps and spatial data) to map specific locations of *P. submutica* using ArcMap 9.3.1 and 10. These locations were classified into discrete element occurrences or populations if they were within 1.2 mi (2 km) and were not separated by unsuitable habitat, based on criteria developed by CNHP (CNHP 2012a, p. 11). Then, we used 2009 aerial imagery (National Agricultural Inventory Project 2009, spatial data) to look at all sites that were considered historically occupied because they had not been revisited in the last 20 years. Based on our analysis, we determined all historically occupied sites were suitable habitat and considered these sites still in existence and occupied at the time of listing.

(2) We delineated critical habitat areas by creating minimum convex polygons around each population and adding a 328-ft (100-m) wide area to account for indirect effects as described immediately above.

(3) We then modified these critical habitat polygon boundaries to exclude unsuitable habitat as defined by a potential habitat model (Decker *et al.* 2005, p. 9). From this modeling exercise, we chose the more restrictive of the two habitat models (the envelope model) to further refine our critical habitat polygons. This model was developed by comparing occupied areas with environmental variables, such as elevation, slope, precipitation, temperature, geology, soil type, and vegetation type. The environmental variables with the highest predictive abilities influence the potential habitat the model then identifies.

We are designating as critical habitat lands that we have determined are occupied at the time of listing and contain sufficient physical or biological features to support life-history processes essential for the conservation of *Phacelia submutica*.

Nine units were designated based on sufficient elements of physical or biological features being present to support *P. submutica* life processes. All units contain all of the identified elements of physical or biological features and support multiple life processes.

When determining critical habitat boundaries in this final rule, we made every effort to avoid including developed areas such as lands covered by buildings, pavement, and other structures because such lands lack physical and biological features for *Penstemon debilis* and *Phacelia submutica*. The scale of the maps we prepared under the parameters for publication within the Code of Federal Regulations may not reflect the exclusion of such developed lands. Any such lands inadvertently left inside critical

habitat boundaries shown on the maps of this final rule have been excluded by text in the rule and are not designated as critical habitat. Therefore, a Federal action involving these lands will not trigger section 7 consultation with respect to critical habitat and the requirement to avoid destruction and adverse modification unless the specific action would affect the physical or biological features in the adjacent critical habitat. In the case of *Ipomopsis polyantha*, because the plant is often found growing on partially developed sites, around buildings, or immediately adjacent to roads, we did not exclude buildings, pavement, and other structures.

Final Critical Habitat Designation

Ipomopsis polyantha

We are designating four units as critical habitat for *Ipomopsis polyantha*. The critical habitat areas described below constitute our best assessment at this time of areas that meet the definition of critical habitat. Those four units are: (1) Dyke, (2) O’Neal Hill Special Botanical Area, (3) Pagosa Springs, and (4) Eight Mile Mesa. Table 1 shows the occupancy of the units.

TABLE 1. Occupancy of *Ipomopsis polyantha* by designated critical habitat units.

Unit	Currently Occupied? AND Occupied at Time of Listing?
1. Dyke	Yes
2. O’Neal Hill Special Botanical Area	No
3. Pagosa Springs	Yes
4. Eight Mile Mesa	No

The approximate area of each CHU is shown in Table 2.

TABLE 2. Designated critical habitat units (CHUs) for *Ipomopsis polyantha*. [Area estimates reflect all land within CHU boundaries.]

Critical Habitat Unit	Land Ownership	Size of Unit
1. Dyke	BLM	42 ac (17 ha)
	Private	1,415 ac (573 ha)
	Archuleta County (County Road right-of-ways (ROWs))	5 ac (2 ha)
	Colorado Dept of Transportation	13 ac (5 ha)
	Total for Dyke Unit	1,475 ac (597 ha)
2. O’Neal Hill Special Botanical Unit	USFS–San Juan National Forest	564 ac (228 ha)
3. Pagosa Springs	Town of Pagosa Springs	599 ac (242 ha)
	Colorado Division of Wildlife (CDOW)	28 ac (11 ha)
	Private	5,560 ac (2,251 ha)
	Archuleta County (County Road ROWs)	18 ac (7 ha)
	Archuleta County (County Land)	92 ac (37 ha)
	Colorado Dept of Transportation (Highway ROWs)	50 ac (20 ha)
	State Land Board (SLB)	110 ac (44 ha)
	Total for Pagosa Spring Unit	6,456 ac (2,613 ha)
4. Eight Mile Mesa	USFS–San Juan National Forest	1,146 ac (464 ha)
Total		9,641 ac (3,902 ha)

Note: Area sizes may not sum due to rounding.

We present brief descriptions of all units, and reasons why they meet the definition of critical habitat for *Ipomopsis polyantha*, below. The units are listed in order geographically west to east.

Unit 1: Dyke

Unit 1, the Dyke Unit, consists of 1,475 ac (597 ha) of Federal and private lands. The Unit is located at the junction of U.S. Hwy 160 and Cat Creek Road (County Road

700) near the historic town of Dyke in Archuleta County, Colorado. Ninety-seven percent of this Unit is on private lands; of these private lands, 1 percent is within highway ROWs. Three percent is on Federal land managed by the BLM, through the Pagosa Springs Field Office of the San Juan Public Lands Center. This Unit is currently occupied.

This Unit currently has all the physical and biological features essential to the conservation of the species including a collection of all three communities (barren shales, open montane grassland (primarily Arizona fescue) understory at the edges of open Ponderosa pine, or clearings within the Ponderosa pine and Rocky Mountain juniper and Utah juniper and oak communities), pockets of shale with little to no competition from other species, suitable elevational ranges from 6,720 to 7,285 ft (2,048 to 2,220 m), Mancos shale soils, suitable climate, pollinators and habitat for these pollinators, and areas where the correct disturbance regime is present. Lands within this Unit are largely agricultural although some housing is present within the Unit. A large hunting ranch also falls within this Unit. While these lands currently have the physical and biological features essential to the conservation of *Ipomopsis polyantha*, because of a lack of cohesive management and protections, special management will be required to maintain these features in this Unit.

Threats to *Ipomopsis polyantha* in this Unit include highway maintenance and disturbance (several hundred plants have been documented along Highway 160 (CNHP 2012b, p. 5)), grazing, agricultural use, *Bromus inermis* encroachment, potential

development, and a new road that was constructed through the *I. polyantha* population.

Unit 2: O'Neal Hill Special Botanical Unit

Unit 2, the O'Neal Hill Botanical Unit consists of 564 ac (228 ha) of USFS land managed by the San Juan National Forest. The Unit is north of Pagosa Springs, roughly 13 mi (21 km) north along Piedra Road. Roughly 49 percent of this Unit (279 ac (113 ha)) falls within the O'Neal Hill Special Botanical Area that was designated to protect another Mancos shale endemic, *Lesquerella pruinosa* (Pagosa bladderpod). Because *L. pruinosa* is sometimes found growing with *Ipomopsis polyantha*, we believe the site has high potential for introduction of *I. polyantha*. This Unit is not currently occupied. We reduced this Unit from our proposed critical habitat designation in our notice of availability (77 FR 18161) so that the thick pasture grass and riparian areas in the bottomlands that do not contain many of the PCEs for *I. polyantha* would no longer be included (Holtrop 2011, p. 1).

This Unit currently has all the physical and biological features essential to the conservation of the species, including a collection of all three plant communities, pockets of shale with little to no competition from other species, suitable elevational ranges from 7,640 to 8,360 ft (2,330 to 2,550 m), Mancos shale soils, suitable climate, habitat for pollinators (although we do not know if *Ipomopsis polyantha* pollinators are found here), and areas where the correct disturbance regime is present. Because of the presence of these features, we believe this may make a good introduction area for *I. polyantha* in the

future and is needed to ensure conservation of the species.

Threats to *Ipomopsis polyantha* in this Unit include road maintenance and disturbance, low levels of recreation, including hunting, deer and elk use, and a utility corridor and related maintenance (Brinton 2011, p. 1).

Ipomopsis polyantha is known from only two populations, both with few or no protections (little resilience). For adequate resiliency and protection we believe it is necessary for survival and recovery that additional populations with further protections be established. Because this area receives low levels of use and because it is already partially protected through the special botanical area, the area would make an ideal site for future introductions of *I. polyantha*. Therefore, we have identified this Unit as critical habitat for *I. polyantha*.

Unit 3: Pagosa Springs

Unit 3, the Pagosa Springs Unit, is the largest of the four *Ipomopsis polyantha* CHUs and consists of 6,456 ac (2,613 ha) of municipal, State, and private lands. The Unit is located at the junction of Highways 160 and 84, south along Highway 84, west along County Road 19, and east along Mill Creek Road. Ownership of the land in Unit 3 is divided as follows: 86.1 percent is under private ownership, 9.2 percent is owned by the Town of Pagosa Springs, 1.7 percent is owned and operated by the Colorado State Land Board (SLB), 0.7 percent falls within the Colorado Department of Transportation

(CDOT) ROWs, 0.4 percent is found on CDOW lands, 0.2 percent is located on Archuleta County ROWs, and 1.4 percent is located on a parcel newly acquired by Archuleta County. This Unit is currently occupied and contains the majority of *I. polyantha* individuals.

This Unit currently has all the physical and biological features essential to the conservation of the species, including a collection of all three plant communities, pockets of shale with little to no competition from other species, suitable elevational ranges from 6,960 to 7,724 ft (2,120 to 2,350 m), Mancos shale soils, suitable climate, pollinators and habitat for these pollinators, and areas where the correct disturbance regime is present. Lands within this Unit fall into a wide array of land management scenarios, including agricultural use, junkyards, urban areas, small residential lots, and large 30- to 40-ac (12- to 16-ha) residential parcels. While these lands currently have the physical and biological features essential to the conservation of *Ipomopsis polyantha*, because of a lack of cohesive management and protections, special management will be required to maintain these features in this Unit.

Since 86 percent of this Unit is under private ownership and there is no land under Federal ownership, the primary threat to the species in this Unit is agricultural or urban development. Other threats include highway ROW disturbances, *Bromus inermis* and other nonnative invasive species, excessive livestock grazing, and mowing.

Unit 4: Eight Mile Mesa

Unit 4, Eight Mile Mesa, consists of 1,146 ac (464 ha) of USFS lands that are managed by the Pagosa Springs Field Office of the San Juan National Forest. This Unit is located roughly 6.5 mi (10.5 km) south of the intersections of Highways 160 and 84 in Pagosa Springs, Colorado, and on the western side of Highway 84. This Unit is not currently occupied. We reduced this Unit from our proposed critical habitat designation in our notice of availability (77 FR 18161) so that isolated patches, separated from the rest of the Unit by roads, would no longer be included (Holtrop 2011, p. 1).

This Unit currently has all the physical and biological features essential to the conservation of the species including a collection of all three plant communities, pockets of shale with little to no competition from other species, suitable elevational ranges from 7,320 to 7,858 ft (2,230 to 2,395 m), Mancos shale soils, suitable climate, habitat for pollinators, and areas where the correct disturbance regime is present. Because there are so few Mancos shale sites on Federal lands, and because this site has an array of habitat types, it provides the best potential area for introduction of *Ipomopsis polyantha* in the future.

Threats to *Ipomopsis polyantha* in this Unit include a road running through the site, recreational use, horseback riding, dispersed camping and hunting, and firewood gathering. The road is a threat because it generates fugitive dust and pollutants, provides a source for nonnative invasive plants, causes habitat fragmentation, increases edge effects and drying, and may limit pollinator movement, among other reasons. The Unit

has some dense Ponderosa pine stands, and several small wildfires, which are actively suppressed, occur every year. Benefiting the designation, there is a vacant grazing allotment at this Unit, and noxious weeds are being actively controlled (Brinton 2011, p. 1).

Ipomopsis polyantha is known from only two populations, both with few or no protections (little resilience). For adequate resiliency and protection we believe it is necessary for survival and recovery that additional populations with further protections be established. Therefore, we have identified this Unit and one other unoccupied area as critical habitat for *I. polyantha*.

Penstemon debilis

We are designating four units as critical habitat for *Penstemon debilis*. The critical habitat areas described below constitute our best assessment at this time of areas that meet the definition of critical habitat. Those four units are: (1) Brush Mountain, (2) Cow Ridge, (3) Mount Callahan, and (4) Anvil Points. Table 3 shows the occupancy of the units.

TABLE 3. Occupancy of *Penstemon debilis* by designated critical habitat units.

Unit	Currently Occupied? AND Occupied at time of listing?
1. Brush Mountain	No
2. Cow Ridge	No
3. Mount Callahan	Yes
4. Anvil Points	Yes

TABLE 4. Designated critical habitat units (CHUs) for *Penstemon debilis*. [Area estimates reflect all land within CHU boundaries.]

Critical Habitat Unit	Land Ownership by Type		Size of Unit
	Federal	Private	
1. Brush Mountain	1,437 ac (582 ha)	0 ac (0 ha)	1,437 ac (582 ha)
2. Cow Ridge	4,819 ac (1,950 ha)	0 ac (0 ha)	4,819 ac (1,950 ha)
3. Mount Callahan	4,232 ac (1,713 ha)	137 ac (55 ha)	4,369 ac (1,768 ha)
4. Anvil Points	3,424 ac (1,386 ha)	1,461 ac (591 ha)	4,885 ac (1,977 ha)
Total	13,912 ac (5,631 ha)	1,598 ac (646 ha)	15,510 ac (6,277 ha)

Note: Area sizes may not sum due to rounding.

We present brief descriptions of all units, and reasons why they meet the definition of critical habitat for *Penstemon debilis*, below. The units are listed in order geographically west to east, and north to south.

Unit 1: Brush Mountain

Unit 1, the Brush Mountain Unit, consists of 1,437 ac (582 ha) of federally owned lands, managed by BLM through the Grand Junction Field Office. It is located approximately 16 mi (26 km) northwest of the town of DeBeque in Garfield County, Colorado. It is northwest of the intersection of Roan Creek Road (County Road 204) and Brush Creek Road (County Road 209). This Unit is not currently occupied.

This Unit has all the physical and biological features essential to the conservation of the species, including the Rocky Mountain Cliff and Canyon plant community (NatureServe 2004, spatial data) with less than 10 percent plant cover, suitable elevational ranges of 6,234 to 8,222 ft (1,900 to 2,506 m), outcrops of the Parachute Creek Member of the Green River Formation, steep slopes of these soil outcrops that lend

to the appropriate disturbance levels, pollinator habitat, and a climate with between 12 to 18 in. (30 and 46 cm) in annual rainfall and winter snow. Because of the presence of these features, we believe this may make a good introduction area for *Penstemon debilis* in the future and is needed to ensure conservation of the species.

The primary threat to *Penstemon debilis* in this Unit is energy development and associated activities. *Penstemon debilis* consists of only 4,100 known individuals (little redundancy), and all occur within 2 concentrated areas (little resilience). For adequate redundancy and resiliency, we believe it is necessary for survival and recovery that additional populations be established. Therefore, we have identified this Unit as critical habitat for *P. debilis*.

Unit 2: Cow Ridge

Unit 2, the Cow Ridge Unit, is 4,819 ac (1,950 ha) of federally owned lands managed by BLM through the Grand Junction Field Office. It is located approximately 8 mi (13 km) northwest of the town of DeBeque in Garfield County, Colorado, and north of Dry Fork Road. This Unit is not currently occupied.

This Unit has all the physical and biological features essential to the conservation of the species, including the Rocky Mountain Cliff and Canyon plant community (NatureServe 2004, spatial data) with less than 10 percent cover, suitable elevational ranges of 6,273 to 8,284 ft (1,912 to 2,525 m), outcrops of the Parachute Creek Member

of the Green River Formation, steep slopes of these soil outcrops that lend to the appropriate disturbance levels, habitat for pollinators, and a climate with between 12 to 18 in (30 and 46 cm) in annual rainfall and winter snow. Because of the presence of these features, we believe this may make a good introduction area for *Penstemon debilis* in the future and is needed to ensure conservation of the species.

The primary threat to *Penstemon debilis* in this Unit is energy development and associated activities. *Penstemon debilis* consists of only 4,100 known individuals (little redundancy) and all within 2 concentrated areas (low resilience). For adequate redundancy and resiliency, we believe it is necessary for survival and recovery that additional populations be established. Therefore, we have identified this Unit as a CHU for *P. debilis*.

Unit 3: Mount Callahan

Unit 3, the Mount Callahan Unit, consists of 4,369 ac (1,768 ha) of Federal and private land. It is located approximately 2 mi (3 km) west of the town of Parachute on the south-facing slopes of Mount Callahan and westward along the cliffs of the Roan Plateau. Fifty-five percent of Unit 3 is managed by the BLM under the management of two field offices: 80 percent of these Federal lands are managed by the Colorado River Valley Field Office and 20 percent are managed by the Grand Junction Field Office.

Oxy has been a partner in the conservation of *Penstemon debilis* since 1987. We

have excluded all Oxy lands based on: (1) This continuing partnership, (2) existing CNA Agreements (674 ac (273 ha)) for two CNAs (the Mount Callahan and Mount Callahan Saddle), (3) commitments to create a third CNA (the Logan Wash Mine Natural Area) totaling 82 ac (33 ha), (4) already-implemented and further commitments to develop Best Management Practices for the CNAs as well as other adjacent lands, and (5) commitments on Oxy lands to conserve newly discovered *P. debilis* populations with more than 75 individuals. This exclusion totals 3,350 ac (1,356 ha). These exclusions are discussed in further detail below under **Exclusions**. Three percent of this Unit falls on private lands. This Unit is currently occupied.

Once Oxy lands were excluded, four parcels (two BLM and two private) of land remained along the northern edge of the CHU, as proposed. We have elected not to include three (both BLM and one of the two private parcels) of these four parcels in our critical habitat designation because: (1) They would be isolated from the rest of Unit 3; (2) they contain no suitable habitat for *Penstemon debilis* (only pollinator habitat); (3) the pollinator and habitat protection measures on Oxy lands will provide adequate protections for the pollinators on their lands, making these three parcels less important; and (4) they are distant (at least 2,133 ft (650 m)) from occupied and suitable habitat; and (5) we believe they are not necessary for the conservation of the species. The remaining private parcel (137 ac (55 ha)) is closer to occupied habitat, contains suitable habitat, and, therefore, is included in our critical habitat designation.

This Unit currently has all the physical and biological features essential to the

conservation of *Penstemon debilis*, including the Rocky Mountain Cliff and Canyon plant community (NatureServe 2004, spatial data) with less than 10 percent cover, suitable elevational ranges of 5,413 to 8,809 ft (1,650 to 2,685 m), outcrops of the Parachute Creek Member of the Green River Formation, suitable pollinators and habitat for these pollinators, steep slopes of these soil outcrops that lend to the appropriate disturbance levels, and a climate with between 12 to 18 in (30 and 46 cm) in annual rainfall and winter snow.

The primary threat to *Penstemon debilis* and its habitat in this Unit is energy development and associated activities.

Unit 4: Anvil Points

Unit 4, the Anvil Points Unit, consists of 4,885 ac (1,977 ha) of Federal and private land. It is located approximately 1 mi (2 km) north of the town of Rulison in Garfield County, Colorado. Seventy percent of this Unit is managed by the BLM, Colorado River Valley Field Office. Twenty-three percent of the Unit (1,102 ac (446 ha)) is within several potential BLM Areas of Critical Environmental Concern (ACECs). If these become ACECs, they would have several stipulations to protect *Penstemon debilis*, particularly from oil and gas development. These areas are discussed further in the proposed (75 FR 35732; June 23, 2010) and final listing rules (76 FR 45054). Thirty percent of this Unit is on private lands. This Unit is currently occupied.

This Unit currently has all the physical and biological features essential to the conservation of *Penstemon debilis*, including the Rocky Mountain Cliff and Canyon plant community (NatureServe 2004, spatial data) with less than 10 percent plant cover, suitable elevational ranges of 6,318 to 9,288 ft (1,926 to 2,831 m), outcrops of the Parachute Creek Member of the Green River Formation, suitable pollinators and habitat for these pollinators, steep slopes of these soil outcrops that lend to the appropriate disturbance levels, and a climate with between 12 to 18 in (30 and 46 cm) in annual rainfall and winter snow.

The primary threat to *Penstemon debilis* and its habitat in this Unit is energy development and associated activities. This Unit falls within the boundary of the BLM's Roan Plateau RMP. The RMP has two lease stipulations that directly address endangered, threatened and candidate plants. A no surface occupancy lease stipulation (NSO-12) protects occupied habitat and adjacent potential habitat from ground disturbing activities, with narrow exceptions. A controlled surface use stipulation (CSU-12) protects special status plant species and plant communities by authorizing BLM to impose special design, operation, mitigation and reclamation measures, including relocation of ground disturbing activities by more than 200 meters, with some exceptions. Special management considerations and protections are thus contemplated.

Phacelia submutica

We are designating nine units as critical habitat for *Phacelia submutica*. The

critical habitat areas described below constitute our best assessment at this time of areas that meet the definition of critical habitat. The nine units we designate as critical habitat are: (1) Sulphur Gulch, (2) Pyramid Rock, (3) Roan Creek, (4) DeBeque, (5) Mount Logan, (6) Ashmead Draw, (7) Baugh Reservoir, (8) Horsethief Mountain, and (9) Anderson Gulch. All units are currently occupied and were occupied at the time of listing. The approximate area of each CHU is shown in Table 5.

TABLE 5. Designated critical habitat units (CHUs) for *Phacelia submutica*. [Area estimates reflect all land within CHU boundaries.]

Unit # / Unit Name	Land Ownership by Type			Size of Unit
	Federal	State	Private	
1. Sulphur Gulch	1,046 ac (423 ha)	0 ac (0 ha)	0 ac (0 ha)	1,046 ac (423 ha)
2. Pyramid Rock	15,429 ac (6,244 ha)	0 ac (0 ha)	1,892 ac (766 ha)	17,321 ac (7,010 ha)
3. Roan Creek	2 ac (1 ha)	0 ac (0 ha)	52 ac (21 ha)	54 ac (22 ha)
4. DeBeque	401 ac (162 ha)	0 ac (0 ha)	129 ac (52 ha)	530 ac (215 ha)
5. Mount Logan	242 ac (98 ha)	0 ac (0 ha)	35 ac (14 ha)	277 ac (112 ha)
6. Ashmead Draw	1,110 ac (449 ha)	0 ac (0 ha)	166 ac (67 ha)	1,276 ac (516 ha)
7. Baugh Reservoir	169 ac (68 ha)	0 ac (0 ha)	261 ac (106 ha)	430 ac (174 ha)
8. Horsethief Mountain	3,614 ac (1,463 ha)	0 ac (0 ha)	594 ac (240 ha)	4,209 ac (1,703 ha)
9. Anderson Gulch	0 ac (0 ha)	192 ac (78 ha)	149 ac (60 ha)	341 ac (138 ha)
Total	22,013 ac (8,908 ha)	192 ac (78 ha)	3,278 ac (1,327 ha)	25,484 ac (10,313 ha)

Note: Area sizes may not sum due to rounding.

We present brief descriptions of all units, and reasons why they meet the definition of critical habitat for *Phacelia submutica*, below. The units are listed in order geographically west to east.

Unit 1: Sulphur Gulch

Unit 1, the Sulphur Gulch Unit, consists of 1,046 ac (423 ha) of federally owned land. The Unit is located approximately 7.7 mi (12.5 km) southwest of the town of DeBeque in Mesa County, Colorado. This Unit is managed by BLM, through the Grand Junction Field Office. This Unit is currently occupied.

This Unit currently has all the physical and biological features essential to the conservation of the species including barren clay badlands with less than 20 percent plant/vegetation cover, suitable elevational ranges of 5,480 to 6,320 ft (1,670 to 1,926 m), appropriate topography, and shrink-swell alkaline clay soils within the Atwell Gulch and Shire members of the Wasatch Formation. All lands within this Unit are leased as grazing allotments, and less than 1 percent is managed as an active pipeline ROW by the BLM. While these lands currently have the physical and biological features essential to the conservation of *Phacelia submutica*, because of a lack of cohesive management and protections, special management will be required to maintain these features in this Unit.

Threats to *Phacelia submutica* and its habitat in this Unit include energy development, recreation (especially OHV use), domestic and wild ungulate grazing and use, and nonnative invasive species, such as *Bromus tectorum*.

Unit 2: Pyramid Rock

Unit 2, the Pyramid Rock Unit, is the largest Unit we are designating and consists of 17,321 ac (7,010 ha) of federally and privately owned lands in Mesa and Garfield Counties, Colorado. This Unit is approximately 1.6 mi (2.6 km) west of the town of DeBeque. The eastern boundary borders Roan Creek, and Dry Fork Creek runs through the northern quarter of the Unit. Eighty-nine percent is managed by BLM through the Grand Junction Field Office, and 11 percent is under private ownership. Three percent of this Unit is within the Pyramid Rock Natural Area and Pyramid Rock ACEC that was designated, in part, to protect *Phacelia submutica*, as discussed in the proposed (75 FR 35739) and final listing rules (76 FR 45054). This Unit is currently occupied.

This Unit currently has all the physical and biological features essential to the conservation of the species including barren clay badlands with less than 20 percent plant/vegetation cover, suitable elevational ranges of 4,960 to 6,840 ft (1,512 to 2,085 m), the appropriate topography, and shrink-swell alkaline clay soils within the Atwell Gulch and Shire members of the Wasatch Formation. Ninety-four percent of this Unit is managed as a grazing allotment on BLM and private lands. Additionally, 11 percent of this Unit is managed as an active pipeline ROW. While these lands currently have the physical and biological features essential to the conservation of *Phacelia submutica*, because of a lack of cohesive management and protections, special management will be required to maintain these features in this Unit.

Threats to *Phacelia submutica* and its habitat in this Unit include energy

development, recreation (especially OHV use), livestock and wild ungulate grazing and use, and nonnative invasive species including *Bromus tectorum* and *Halogeton glomeratus*. The Westwide Energy corridor runs through this Unit. The corridor covers almost 10 percent of this Unit (Service 2011c, p. 9).

Unit 3: Roan Creek

Unit 3, the Roan Creek Unit, consists of 54 ac (22 ha) of federally and privately owned lands in Garfield County, Colorado. The Unit is located 3.3 mi (5.4 km) north of the town of DeBeque and for 1.7 mi (2.7 km) along both sides of County Road 299. Ninety-seven percent of this Unit is privately owned. Three percent of this Unit is managed by BLM through the Grand Junction Field Office. This Unit is currently occupied.

This Unit currently has all the physical and biological features essential to the conservation of the species including barren clay badlands with less than 20 percent cover, suitable elevational ranges of 5,320 to 5,420 ft (1,622 to 1,652 m), the appropriate topography, and shrink-swell alkaline clay soils within the Atwell Gulch and Shire members of the Wasatch Formation. The entire Unit is within a grazing allotment. While these lands currently have the physical and biological features essential to the conservation of *Phacelia submutica*, because of a lack of cohesive management and protections, special management will be required to maintain these features in this Unit.

Threats to *Phacelia submutica* and its habitat in this Unit include recreation (especially OHV use), livestock and wild ungulate grazing and use, nonnative invasive species including *Bromus tectorum* and *Halogeton glomeratus*, and a lack of protections on private lands.

Unit 4: DeBeque

Unit 4, the DeBeque Unit, consists of 530 ac (215 ha) of Federal and private lands in Mesa County, Colorado. This Unit is located 0.25 mi (0.4 km) north of DeBeque between Roan Creek Road and Cemetery Road. Seventy-six percent of this Unit is managed by BLM through the Grand Junction Field Office. This Unit is currently occupied.

This Unit currently has all the physical and biological features essential to the conservation of the species including barren clay badlands with less than 20 percent plant/vegetation cover, suitable elevational ranges of 5,180 to 5,400 ft (1,579 to 1,646 m), the appropriate topography, and shrink-swell alkaline clay soils within the Atwell Gulch and Shire members of the Wasatch Formation. While these lands currently have the physical and biological features essential to the conservation of *Phacelia submutica*, because of a lack of cohesive management and protections, special management will be required to maintain these features in this Unit.

Threats to *Phacelia submutica* and its habitat in this Unit include energy

development, residential development, recreation (especially OHV use), livestock and wild ungulate grazing and use, and nonnative invasive species including *Bromus tectorum* and *Halogeton glomeratus*. Since 24 percent of the Unit is privately owned and borders the north of the town of DeBeque, this Unit is threatened by potential urban or agricultural development. The Westwide Energy corridor runs through this Unit. The corridor covers almost 66 percent of this Unit (Service 2011c, p. 9).

Unit 5: Mount Logan

Unit 5, the Mount Logan Unit, consists of 277 ac (112 ha) of Federal and private lands in Garfield County, Colorado. The Unit is located 2.7 mi (4.4 km) north, northeast of the town of DeBeque, Colorado, and 0.5 mi (0.8 km) west of Interstate 70. Eighty-eight percent of this Unit is managed by BLM through the Grand Junction Field Office. The remainder of this Unit is privately owned. This Unit is currently occupied.

This Unit currently has all the physical and biological features essential to the conservation of the species including barren clay badlands with less than 20 percent plant/vegetation cover, suitable elevational ranges of 4,960 to 5,575 ft (1,512 to 1,699 m), the appropriate topography, and shrink-swell alkaline clay soils within the Atwell Gulch and Shire members of the Wasatch Formation. Eighty-eight percent of this Unit is managed as a grazing allotment by BLM, and 53 percent is managed as an active pipeline ROW. An access road runs through the Unit connecting several oil wells and associated infrastructure. While these lands currently have the physical and biological features

essential to the conservation of *Phacelia submutica*, because of a lack of cohesive management and protections, special management will be required to maintain these features in this Unit.

Threats to *Phacelia submutica* and its habitat in this Unit include energy development, recreation (especially OHV use), livestock and wild ungulate grazing and use, and nonnative invasive species, including *Bromus tectorum* and *Halogeton glomeratus*.

Unit 6: Ashmead Draw

Unit 6, the Ashmead Draw Unit, consists of 1,276 ac (516 ha) of Federal and private lands in Mesa County, Colorado. The Unit is located 1.5 mi (2.5 km) southeast of the town of DeBeque, Colorado, and east of 45.5 Road (DeBeque Cut-off Road). Eighty-seven percent of this Unit is managed by BLM through the Grand Junction Field Office, the remainder is private lands. This Unit is currently occupied. We slightly increased the size of this Unit from our proposed critical habitat designation in our notice of availability (77 FR 18162) to include sites that were revisited and more accurately mapped during the spring of 2011 (Service 2011e, pp. 1–3).

This Unit currently has all the physical and biological features essential to the conservation of the species including barren clay badlands with less than 20 percent plant/vegetation cover, suitable elevational ranges of 4,940 to 5,808 ft (1,506 to 1,770 m),

the appropriate topography, and shrink-swell alkaline clay soils within the Atwell Gulch and Shire members of the Wasatch Formation. A network of access roads runs through the Unit. Eighty-eight percent of this Unit is within a BLM grazing allotment, and 84 percent is within the Grand Junction Field Office's designated energy corridor. Thirty percent of the Unit is managed as an active pipeline ROW. While these lands currently have the physical and biological features essential to the conservation of *Phacelia submutica*, because of a lack of cohesive management and protections, special management will be required to maintain these features in this Unit.

Threats to *Phacelia submutica* and its habitat in this Unit include energy development, recreation (especially OHV use), livestock and wild ungulate grazing and use, and nonnative invasive species, including *Bromus tectorum* and *Halogeton glomeratus*. The Westwide Energy corridor runs through this Unit. The entire Unit is within the Westwide Energy corridor, and 88 percent is within several grazing allotments.

Unit 7: Baugh Reservoir

Unit 7, the Baugh Reservoir Unit, consists of 430 ac (174 ha) of Federal and private lands in Mesa County, Colorado. The Unit is located 6 mi (10 km) south of DeBeque, Colorado, near Kimball Mesa and Horse Canyon Road. Thirty-nine percent is managed by BLM through the Grand Junction Field Office, and the remaining 61 percent is on private lands. This Unit is currently occupied. We slightly increased the size of this Unit from our proposed critical habitat designation in our notice of availability (77 FR

18162) to include sites that were revisited and more accurately mapped during the spring of 2011 (Service 2011e, pp. 5–8).

This Unit currently has all the physical and biological features essential to the conservation of the species, including barren clay badlands with less than 20 percent plant/vegetation cover, a suitable elevational range of 5,400 to 5,700 ft (1,646 to 1,737 m), the appropriate topography, and shrink-swell alkaline clay soils within the Atwell Gulch and Shire members of the Wasatch Formation. An access road runs through the Unit, close to the occurrence of *Phacelia submutica*. While these lands currently have the physical and biological features essential to the conservation of *P. submutica*, because of a lack of cohesive management and protections, special management will be required to maintain these features in this Unit.

Threats to *Phacelia submutica* and its habitat in this Unit include energy development, recreation, livestock and wild ungulate grazing and use, and nonnative invasive species including *Bromus tectorum* and *Halogeton glomeratus*. The Westwide Energy corridor runs through this Unit. The entire Unit is within the Westwide Energy corridor and one grazing allotment.

Unit 8: Horsethief Mountain

Unit 8, the Horsethief Mountain Unit, consists of 4,209 ac (1,703 ha) of Federal and private lands in Mesa County, Colorado. It is located approximately 3.5 mi (5.6 km)

southeast of DeBeque, Colorado, and along the eastern side of Sunnyside Road (V Road). Thirty-four percent is managed by BLM through the Grand Junction Field Office, 29 percent by the White River National Forest, 23 percent by the Grand Mesa Uncompahgre National Forest, and 14 percent is on private lands. This Unit is currently occupied.

This Unit currently has all the physical and biological features essential to the conservation of the species, including barren clay badlands with less than 20 percent plant/vegetation cover, a suitable elevational range of 5,320 to 6,720 ft (1,622 to 2,048 m), the appropriate topography, and shrink-swell alkaline clay soils within the Atwell Gulch and Shire members of the Wasatch Formation. While these lands currently have the physical and biological features essential to the conservation of *Phacelia submutica*, because of a lack of cohesive management and protections, special management will be required to maintain these features in this Unit. A portion of the site on USFS lands is within a proposed Research Natural Area.

Threats to *Phacelia submutica* and its habitat in this Unit include energy development, recreation (especially OHV use), livestock and wild ungulate grazing and use, and nonnative invasive species, including *Bromus tectorum* and *Halogeton glomeratus*.

Unit 9: Anderson Gulch

Unit 9, the Anderson Gulch Unit, consists of 341 ac (138 ha) of State and private

lands in Mesa County, Colorado. It is located 11 mi (17 km) southeast of DeBeque, Colorado, and 3.5 mi (5.5 km) north of the town of Molina, Colorado. Within the Unit, 56 percent of the lands are managed by CDOW, within the Plateau Creek State Wildlife Area, and 44 percent is private. This Unit is currently occupied. We slightly increased the size of this Unit from our proposed critical habitat designation in our notice of availability (77 FR 18162) to include sites that were revisited and more accurately mapped during the spring of 2011 (CNHP 2012b, spatial data).

This Unit currently has all the physical and biological features essential to the conservation of the species, including barren clay badlands with less than 20 percent plant/vegetation cover, a suitable elevational range of 5,860 to 6,040 ft (1,786 to 1,841 m), the appropriate topography, and shrink-swell alkaline clay soils within the Atwell Gulch and Shire members of the Wasatch Formation. Forty-two percent of the Unit is a pending pipeline ROW. While these lands currently have the physical and biological features essential to the conservation of *Phacelia submutica*, special management may be required to maintain these features in this Unit.

Threats to *Phacelia submutica* and its habitat in this Unit include energy development, recreation (especially from OHV use), livestock and wild ungulate grazing and use, and nonnative invasive species, including *Bromus tectorum* and *Halogeton glomeratus*.

Effects of Critical Habitat Designation

Section 7 Consultation

Section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat of such species. In addition, section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any agency action that is likely to jeopardize the continued existence of any species proposed to be listed under the Act or result in the destruction or adverse modification of proposed critical habitat.

Decisions by the 5th and 9th Circuit Courts of Appeals have invalidated our regulatory definition of “destruction or adverse modification” (50 CFR 402.02) (see *Gifford Pinchot Task Force v. U.S. Fish and Wildlife Service*, 378 F. 3d 1059 (9th Cir. 2004) and *Sierra Club v. U.S. Fish and Wildlife Service et al.*, 245 F.3d 434, 442 (5th Cir. 2001)), and we do not rely on this regulatory definition when analyzing whether an action is likely to destroy or adversely modify critical habitat. Under the statutory provisions of the Act, we determine destruction or adverse modification on the basis of whether, with implementation of the proposed Federal action, the affected critical habitat would continue to serve its intended conservation role for the species.

If a Federal action may affect a listed species or its critical habitat, the responsible

Federal agency (action agency) must enter into consultation with us. Examples of actions that are subject to the section 7 consultation process are actions on State, Tribal, local, or private lands that require a Federal permit (such as a permit from the U.S. Army Corps of Engineers under section 404 of the Clean Water Act (33 U.S.C. 1251 *et seq.*) or a permit from the Service under section 10 of the Act) or that involve some other Federal action (such as funding from the Federal Highway Administration, Federal Aviation Administration, or the Federal Emergency Management Agency). Federal actions not affecting listed species or critical habitat, and actions on State, Tribal, local, or private lands that are not federally funded or authorized, do not require section 7 consultation.

As a result of section 7 consultation, we document compliance with the requirements of section 7(a)(2) through our issuance of:

- (1) A concurrence letter for Federal actions that may affect, but are not likely to adversely affect, listed species or critical habitat; or
- (2) A biological opinion for Federal actions that may affect, and are likely to adversely affect, listed species or critical habitat.

When we issue a biological opinion concluding that a project is likely to jeopardize the continued existence of a listed species and/or destroy or adversely modify critical habitat, we provide reasonable and prudent alternatives to the project, if any are identifiable, that would avoid the likelihood of jeopardy and/or destruction or adverse modification of critical habitat. We define “reasonable and prudent alternatives” (at 50 CFR 402.02) as alternative actions identified during consultation that:

(1) Can be implemented in a manner consistent with the intended purpose of the action,

(2) Can be implemented consistent with the scope of the Federal agency's legal authority and jurisdiction,

(3) Are economically and technologically feasible, and

(4) Would, in the Director's opinion, avoid the likelihood of jeopardizing the continued existence of the listed species and/or avoid the likelihood of destroying or adversely modifying critical habitat.

Reasonable and prudent alternatives can vary from slight project modifications to extensive redesign or relocation of the project. Costs associated with implementing a reasonable and prudent alternative are similarly variable.

Regulations at 50 CFR 402.16 require Federal agencies to reinitiate consultation on previously reviewed actions in instances where we have listed a new species or subsequently designated critical habitat that may be affected and the Federal agency has retained discretionary involvement or control over the action (or the agency's discretionary involvement or control is authorized by law). Consequently, Federal agencies sometimes may need to request reinitiation of consultation with us on actions for which formal consultation has been completed, if those actions with discretionary involvement or control may affect subsequently listed species or designated critical habitat.

Application of the “Adverse Modification” Standard

The key factor related to the adverse modification determination is whether, with implementation of the proposed Federal action, the affected critical habitat would continue to serve its intended conservation role for the species. Activities that may destroy or adversely modify critical habitat are those that alter the physical or biological features to an extent that appreciably reduces the conservation value of critical habitat for *Ipomopsis polyantha*, *Penstemon debilis*, and *Phacelia submutica*. As discussed above, the role of critical habitat is to support the life-history needs of the species and provide for the conservation of the species.

Section 4(b)(8) of the Act requires us to briefly evaluate and describe, in any proposed or final regulation that designates critical habitat, activities involving a Federal action that may destroy or adversely modify such habitat, or that may be affected by such designation.

Activities that may affect critical habitat, when carried out, funded, or authorized by a Federal agency, should result in consultation for the *Ipomopsis polyantha*, *Penstemon debilis*, and *Phacelia submutica*.

For *Ipomopsis polyantha* these activities include, but are not limited to:

(1) Actions that would lead to the destruction or alteration of the plants or their habitat; or actions that would result in continual or excessive disturbance or prohibit

overland soil erosion on Mancos shale soils. Such activities could include, but are not limited to, removing soils to a depth that the seed bank has been removed, repeatedly scraping areas, repeated mowing, excessive grazing, continually driving vehicles across areas, permanent developments, the construction or maintenance of utility or road corridors, and ditching. These activities could remove the seed bank, reduce plant numbers by prohibiting reproduction, impede or accelerate beyond historical levels the natural or artificial erosion processes on which the plant relies (as described above in “*Physical and Biological Features*”), or lead to the total loss of a site.

(2) Actions that would result in the loss of pollinators or their habitat, such that *Ipomopsis polyantha* reproduction could be diminished. Such activities could include, but are not limited to, destroying ground or twig nesting habitat, habitat fragmentation that prohibits pollinator movements from one area to the next, spraying pesticides that will kill pollinators, and eliminating other plant species on which pollinators are reliant for floral resources (this could include replacing native species that provide floral resources with grasses, which do not provide floral resources for pollinators). These activities could result in reduced fruit production for *Ipomopsis polyantha*, or increase the incidence of self-pollination, thereby reducing genetic diversity and seed production.

(3) Actions that would result in excessive plant competition at *Ipomopsis polyantha* sites. Such activities could include, but are not limited to, revegetation efforts that include competitive nonnative invasive species such as *Bromus inermis*, *Medicago sativa* (alfalfa), *Melilotus* spp. (sweetclover); planting native species, such as Ponderosa pine, into open areas where the plant is found; and creating disturbances that allow

nonnative invasive species to invade. These activities could cause *I. polyantha* to be outcompeted and subsequently either lost at sites, or reduced in numbers of individuals.

For *Penstemon debilis* these activities include, but are not limited to:

(1) Actions that would lead to the destruction or alteration of the plants or their habitat. Such activities could include, but are not limited to, activities associated with oil shale mining, including the mines themselves, pipelines, roads, and associated infrastructure; activities associated with oil and gas development, including pipelines, roads, well pads, and associated infrastructure; activities associated with reclamation activities, utility corridors, or infrastructure; and road construction and maintenance. These activities could lead to the loss of individuals, fragment the habitat, impact pollinators, cause increased dust deposition, introduce nonnative invasive species, and alter the habitat such that important downhill movement or the shale erosion no longer occurs.

(2) Actions that would alter the highly mobile nature of the sites. Such activities could include, but are not limited to, activities associated with oil shale mining, including pipelines, roads, and associated infrastructure; activities associated with oil and gas development, including pipelines, roads, well pads, and associated infrastructure; activities associated with reclamation activities, utility corridors, or infrastructure; and road construction and maintenance. These activities could lead to increased soil formation and a subsequent increase in vegetation, alterations to the soil morphology, and the loss of *Penstemon debilis* plants and habitat.

(3) Actions that would result in the loss of pollinators or their habitat, such that

reproduction of *Penstemon debilis* could be diminished. Such activities could include, but are not limited to, destroying ground, twig, or mud nesting habitat; habitat fragmentation that prohibits pollinator movements from one area to the next; spraying pesticides that will kill pollinators; and eliminating other plant species on which pollinators are reliant for floral resources. These activities could result in reduced fruit production for *P. debilis*, or increase the incidence of self-pollination, thereby further reducing genetic diversity and reproductive potential.

For *Phacelia submutica* these activities include, but are not limited to:

(1) Actions that would lead to the destruction or alteration of the plants, their seed bank, or their habitat, or actions that would destroy the fragile clay soils where *Phacelia submutica* is found. Such activities could include, but are not limited to, activities associated with oil and gas development, including pipelines, roads, well pads, and associated infrastructure; utility corridors or infrastructure; road construction and maintenance; excessive OHV use; and excessive livestock grazing. Clay soils are most fragile when wet, so activities that occur when soils are wet are especially harmful. These activities could lead to the loss of individuals, fragment the habitat, impact pollinators, cause increased dust deposition, and alter the habitat such that important erosional processes no longer occur.

(2) Actions that would result in excessive plant competition at *Phacelia submutica* sites. Such activities could include, but are not limited to, using highly competitive species in restoration efforts, or creating disturbances that allow nonnative invasive species, such as *Bromus tectorum* and *Halogeton glomeratus*, to invade. These

activities could cause *P. submutica* to be outcompeted and subsequently either lost or reduced in numbers of individuals.

Exemptions

Application of Section 4(a)(3) of the Act

The Sikes Act Improvement Act of 1997 (Sikes Act) (16 U.S.C. 670a) required each military installation that includes land and water suitable for the conservation and management of natural resources to complete an integrated natural resources management plan (INRMP) by November 17, 2001. An INRMP integrates implementation of the military mission of the installation with stewardship of the natural resources found on the base. Each INRMP includes:

- (1) An assessment of the ecological needs on the installation, including the need to provide for the conservation of listed species;
- (2) A statement of goals and priorities;
- (3) A detailed description of management actions to be implemented to provide for these ecological needs; and
- (4) A monitoring and adaptive management plan.

Among other things, each INRMP must, to the extent appropriate and applicable, provide for fish and wildlife management; fish and wildlife habitat enhancement or modification; wetland protection, enhancement, and restoration where necessary to

support fish and wildlife; and enforcement of applicable natural resource laws.

The National Defense Authorization Act for Fiscal Year 2004 (Pub. L. 108-136) amended the Act to limit areas eligible for designation as critical habitat. Specifically, section 4(a)(3)(B)(i) of the Act (16 U.S.C. 1533(a)(3)(B)(i)) now provides: “The Secretary shall not designate as critical habitat any lands or other geographical areas owned or controlled by the Department of Defense, or designated for its use, that are subject to an integrated natural resources management plan prepared under section 101 of the Sikes Act (16 U.S.C. 670a), if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation.”

No Department of Defense lands occur within the critical habitat designation. Therefore, we are not exempting lands from this final designation of critical habitat for *Ipomopsis polyantha*, *Penstemon debilis*, and *Phacelia submutica* pursuant to section 4(a)(3)(B)(i) of the Act.

Exclusions

Application of Section 4(b)(2) of the Act

Section 4(b)(2) of the Act states that the Secretary shall designate and make revisions to critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, national security impact, and any other relevant

impact of specifying any particular area as critical habitat. The Secretary may exclude an area from critical habitat if he determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless he determines, based on the best scientific data available, that the failure to designate such area as critical habitat will result in the extinction of the species. In making that determination, the statute on its face, as well as the legislative history, are clear that the Secretary has broad discretion regarding which factor(s) to use and how much weight to give to any factor.

In considering whether to exclude a particular area from the designation, we identify the benefits of including the area in the designation, identify the benefits of excluding the area from the designation, and evaluate whether the benefits of exclusion outweigh the benefits of inclusion. If the analysis indicates that the benefits of exclusion outweigh the benefits of inclusion, the Secretary may exercise his discretion to exclude the area only if such exclusion would not result in the extinction of the species.

When identifying the benefits of inclusion for an area, we consider the additional regulatory benefits that area would receive from the protection from adverse modification or destruction as a result of actions with a Federal nexus; the educational benefits of mapping essential habitat for recovery of the listed species; and any benefits that may result from a designation due to State or Federal laws that may apply to critical habitat.

When identifying the benefits of exclusion, we consider, among other things, whether exclusion of a specific area is likely to result in conservation; the continuation,

strengthening, or encouragement of partnerships; or implementation of a management plan that provides equal to or more conservation than a critical habitat designation would provide.

In the case of *Ipomopsis polyantha*, *Penstemon debilis*, and *Phacelia submutica*, the benefits of critical habitat include public awareness of their presence and the importance of habitat protection, and in cases where a Federal nexus exists, increased habitat protection for *I. polyantha*, *P. debilis*, and *P. submutica* due to the protection from adverse modification or destruction of critical habitat. For the reasons discussed below, we are not excluding any lands from our critical habitat designation for *P. submutica* and *I. polyantha*, but we are excluding all Oxy lands within *P. debilis* Unit 3, Mount Callahan

For these three species, all of which are plants that receive limited protections under the Act, the primary impact and benefit of designating critical habitat will be on Federal lands or in instances where there is a Federal action for projects on private lands.

When we evaluate the existence of a conservation plan when considering the benefits of exclusion, we consider a variety of factors, including but not limited to, whether the plan is finalized; how it provides for the conservation of the essential physical or biological features; whether there is a reasonable expectation that the conservation management strategies and actions contained in a management plan will be implemented into the future; whether the conservation strategies in the plan are likely to be effective; and whether the plan contains a monitoring program or adaptive

management to ensure that the conservation measures are effective and can be adapted in the future in response to new information.

After identifying the benefits of inclusion and the benefits of exclusion, we carefully weigh the two sides to evaluate whether the benefits of exclusion outweigh those of inclusion. If our analysis indicates that the benefits of exclusion outweigh the benefits of inclusion, we then determine whether exclusion would result in extinction. If exclusion of an area from critical habitat will result in extinction, we will not exclude it from the designation.

Based on the information provided by entities seeking exclusion, species information, information in our files, as well as other public comments received, we evaluated whether certain lands in the proposed critical habitat unit for *Penstemon debilis*, Unit 3, Mount Callahan were appropriate for exclusion from this final designation pursuant to section 4(b)(2) of the Act. We are excluding the following areas from the critical habitat designation for *P. debilis*: All Oxy lands within the CHU for *P. debilis*, Unit 3, Mount Callahan (3,350 ac (1,356 ha)).

Table 7, below, provides approximate areas (ac, ha) of lands that meet the definition of critical habitat, but are being excluded under section 4(b)(2) of the Act from the final critical habitat rule.

TABLE 7. Areas excluded from critical habitat designation by unit.

Species	Unit	Specific Area	Areas Meeting Definition of critical habitat in ac (ha)	Areas Excluded from critical habitat in ac (ha)
<i>Penstemon debilis</i>	3, Mount Callahan	Oxy lands	7,719 ac (3,124 ha)	3,350 ac (1,356 ha)

We are excluding these areas because we determine that:

(1) They are appropriate for exclusion under the “other relevant factor” provisions of section 4(b)(2) of the Act.

These exclusions are discussed in detail below.

Exclusions Based on Economic Impacts

Under section 4(b)(2) of the Act, we consider the economic impacts of specifying any particular area as critical habitat. In order to consider economic impacts, we prepared a DEA of the proposed critical habitat designation and related factors (Industrial Economics, Incorporated 2012). The DEA, dated March 2, 2012, was made available for public review from March 27, 2012, through April 26, 2012 (77 FR 18157). Following the close of the comment period, a final analysis (dated June 7, 2012) of the potential economic effects of the designation was developed, taking into consideration the public comments received and any new information obtained (Industrial Economics 2012, entire).

The intent of the FEA is to quantify the economic impacts of all potential conservation efforts for *Ipomopsis polyantha*, *Penstemon debilis*, and *Phacelia submutica*; some of these costs will likely be incurred regardless of whether we designate critical habitat (baseline). The economic impact of the final critical habitat designation is analyzed by comparing scenarios both “with critical habitat” and “without critical habitat.” The “without critical habitat” scenario represents the baseline for the analysis, considering protections already in place for the species (e.g., under the Federal listing and other Federal, State, and local regulations). Therefore, the baseline represents the costs incurred regardless of whether critical habitat is designated. The “with critical habitat” scenario describes the incremental impacts associated specifically with the designation of critical habitat for the species. The incremental conservation efforts and associated impacts are those not expected to occur absent the designation of critical habitat for the species. In other words, the incremental costs are those attributable solely to the designation of critical habitat above and beyond the baseline costs; these are the costs we consider in the final designation of critical habitat. The analysis looks retrospectively at baseline impacts incurred since the species was listed, and forecasts both baseline and incremental impacts likely to occur with the designation of critical habitat.

The FEA also addresses how potential economic impacts are likely to be distributed, including an assessment of any local or regional impacts of habitat conservation and the potential effects of conservation activities on government agencies, private businesses, and individuals. The FEA measures lost economic efficiency associated with residential and commercial development and public projects and

activities, such as economic impacts on water management and transportation projects, Federal lands, small entities, and the energy industry. Decision-makers can use this information to assess whether the effects of the designation might unduly burden a particular group or economic sector. Finally, the FEA looks retrospectively at costs that have been incurred since 2011 (year of the species' listing) (76 FR 45054), and considers those costs that may occur in the 20 years following the designation of critical habitat, which was determined to be the appropriate period for analysis because limited planning information was available for most activities to forecast activity levels for projects beyond a 20-year timeframe. The FEA quantifies economic impacts of *Ipomopsis polyantha*, *Penstemon debilis*, and *Phacelia submutica* conservation efforts associated with the following categories of activity: (1) oil and gas development, (2) transportation projects, (3) agriculture and grazing, (4) recreation, and (5) active species management.

The FEA estimates that total potential incremental economic impacts in critical habitat areas for all three species over the next 20 years will be \$967,000 to \$14.8 million (approximately \$85,300 to \$1.3 million on an annualized basis), assuming a 7 percent discount rate (Table 8). The largest contributor to the incremental costs is impacts to oil and gas development, which represent approximately 90 percent of incremental impacts in the low-cost scenario and 99 percent of impacts in the high-cost scenario.

TABLE 8. Incremental impacts of the critical habitat designation for *Ipomopsis polyantha*, *Penstemon debilis*, and *Phacelia submutica* by species, unit, and activity (2012 dollars, assuming a 7 percent discount rate).

Unit #	Unit Name	Oil & Gas -Low-	Oil & Gas -High-	Transportation	Agriculture & Grazing	Recreation	Species Mgmt	Subtotal -Low-	Subtotal -High-
Critical Habitat Designation									
<i>Ipomopsis polyantha</i> (Pagosa Skyrocket)									
1	Dyke	\$0	\$0	\$9,370	\$0	\$0	\$0	\$9,370	\$9,370
2	O'Neal Hill Special Botanical Area	\$0	\$0	\$0	\$0	\$7,500	\$0	\$7,500	\$7,500
3	Pagosa Springs	\$0	\$0	\$3,330	\$0	\$0	\$0	\$3,330	\$3,330
4	Eight Mile Mesa	\$0	\$0	\$0	\$0	\$7,500	\$0	\$7,500	\$7,500
<i>Penstemon debilis</i> (Parachute Beardtongue)									
1	Brush Mountain	\$11,600	\$195,000	\$0	\$0	\$0	\$0	\$11,600	\$195,000
2	Cow Ridge	\$35,500	\$599,000	\$0	\$0	\$0	\$0	\$35,500	\$599,000
3	Mount Callahan	\$10,900	\$184,000	\$0	\$0	\$2,130	\$0	\$13,000	\$186,000
4	Anvil Points	\$8,470	\$143,000	\$0	\$0	\$2,130	\$0	\$10,600	\$145,000
<i>Phacelia submutica</i> (DeBeque Phacelia)									
1	Sulphur Gulch	\$37,300	\$629,000	\$0	\$1,590	\$1,060	\$0	\$39,900	\$632,000
2	Pyramid Rock	\$627,000	\$10,600,000	\$0	\$1,590	\$1,060	\$0	\$630,000	\$10,600,000
3	Roan Creek	\$398	\$6,720	\$0	\$0	\$0	\$0	\$398	\$6,720
4	DeBeque	\$13,100	\$221,000	\$0	\$1,590	\$1,060	\$0	\$15,800	\$224,000
5	Mount Logan	\$0	\$0	\$0	\$1,590	\$2,130	\$0	\$3,720	\$3,720
6	Ashmead Draw	\$44,700	\$755,000	\$0	\$1,590	\$1,060	\$0	\$47,400	\$757,000
7	Baugh Reservoir	\$18,200	\$307,000	\$0	\$1,590	\$1,060	\$0	\$20,800	\$310,000
8	Horsethief Mountain	\$60,200	\$1,020,000	\$0	\$43,600	\$5,820	\$0	\$110,000	\$1,070,000
9	Anderson Gulch	\$1,150	\$19,500	\$0	\$0	\$0	\$0	\$1,150	\$19,500
Activity Subtotal		\$868,000	\$14,700,000	\$12,700	\$53,200	\$32,500	\$0	\$967,000	\$14,800,000
Areas Excluded									
<i>Penstemon debilis</i>									
3	Mount Callahan		\$0	\$0	\$0	\$0	\$0		\$0

Note: Totals may not sum due to rounding.

In the low-cost scenario, proposed Unit 2 for *Phacelia submutica* has the highest incremental impacts (65 percent of total), followed by proposed Unit 8 for *P. submutica* (11 percent of total) and proposed Unit 6 for *P. submutica* (five percent of total). In the high-cost scenario, these same three units (proposed Units 2, 8, and 6 for *P. submutica*) have the highest incremental impacts with 72 percent, 7 percent, and 5 percent of the total incremental impacts, respectively.

Incremental impacts to oil and gas development range from \$868,000 to \$14.7 million, assuming a 7 percent discount rate. These impacts are related to future oil and gas development that occurs in areas greater than 100 meters from known *Phacelia submutica* occurrences and greater than 1,000 meters from known *Penstemon debilis* occurrences. Similar to the baseline impacts, the large range in incremental impacts is due to uncertainty regarding the level and distribution of future oil and gas development.

Incremental impacts to transportation projects are estimated to be \$12,700, assuming a 7 percent discount rate. Incremental impacts to recreational activities are estimated to be \$32,500, assuming a 7 percent discount rate. The incremental impacts to transportation and recreational activities are limited to the administrative cost of consultation. Incremental impacts to agriculture and grazing are estimated to be \$53,200, assuming a 7 percent discount rate.

We are not excluding any lands based on economic impacts. A copy of the FEA with supporting documents may be obtained by contacting the Western Colorado

Ecological Services Office (see **ADDRESSES**) or by downloading from the Internet at <http://www.regulations.gov>.

Exclusions Based on Other Relevant Impacts

Under section 4(b)(2) of the Act, we consider any other relevant impacts, in addition to economic impacts and impacts on national security. We consider a number of factors including whether the landowners have developed any HCPs or other management plans for the area, or whether there are conservation partnerships that would be encouraged by designation of, or exclusion from, critical habitat. In addition, we look at any Tribal issues, and consider the government-to-government relationship of the United States with Tribal entities. We also consider any social impacts that might occur because of the designation.

Land and Resource Management Plans, Conservation Plans, or Agreements based on Conservation Partnerships

We consider for exclusions areas that receive some protection due to the existence of partnerships that result in tangible benefits to listed species. For these exclusions, we consider a number of factors, including current management or the existence of a management plan. We consider a current land management or conservation plan (HCPs, as well as other types) to provide adequate management or protection if it meets the following criteria:

(1) The plan is complete and provides the same or better level of protection from adverse modification or destruction than that provided through a consultation under section 7 of the Act;

(2) There is a reasonable expectation that the conservation management strategies and actions will be implemented for the foreseeable future, based on past practices, written guidance, or regulations; and

(3) The plan provides conservation strategies and measures consistent with currently accepted principles of conservation biology.

We find that the Mount Callahan Natural Area, Mount Callahan Saddle Natural Area, and Logan Wash Mine Natural Area and their associated Best Management Practices fulfill the above criteria, and are excluding non-Federal lands covered by this partnership that provide for the conservation of *Penstemon debilis*.

Exclusions Based on the Partnership between Oxy and CNAP (Mount Callahan Natural Area, the Mount Callahan Saddle Natural Area, and the Logan Wash Mine Natural Area)

We are excluding lands owned by Oxy based on the partnership between Oxy and the State of Colorado's CNAP to conserve the majority of three of the four viable populations of *Penstemon debilis*. This long standing partnership (over 25 years) is evidenced by the designation of Oxy lands that contain these *P. debilis* populations and their habitat as CNAs. The Mount Callahan Natural Area was designated by Oxy and CNAP in 1987, shortly after the discovery of *P. debilis* (CNAP 1987, pp. 1–7). The

Mount Callahan Saddle Natural Area was designated by Oxy and CNAP in 2008 (CNAP 2008, pp. 1–11). A third area, the Logan Wash Mine Natural Area, is in the process of being designated (CNAP and Oxy 2012, pp. 1–64). All three CNAs were or are being designated on a voluntary basis as protected areas primarily to protect *P. debilis*. The agreement between Oxy and CNAP to designate these CNAs provides conservation strategies and measures consistent with currently accepted principles of conservation biology as explained in the following discussion. Evidence of the partnership between Oxy and CNAP and their commitment to the conservation of *P. debilis* is provided by the articles of designation for the CNAs and the associated BMPs, as described below. The articles of designation (for all three areas) identify the following conservation measures: Implement the BMPs both within the CNAs where the plant is found and also for nearby habitats; prohibit camping; conduct noxious weed management to minimize damage to *P. debilis*; limit grazing to preserve natural qualities; and prohibit most vehicle use (CNAP and Oxy 2012, pp. 1–64). Oxy currently operates gas wells on five pads and an access road in the proposed exclusion. Future plans include the drilling of eight multi-well pads, none of which are close to any populations of *P. debilis* (Biever 2011, p. 10).

Within the CNAs, the BMPs provide guidelines for surveys and require surveys prior to any surface disturbance. Within 330 ft (100 m) of occupied habitat, the BMPs require that impacts to *Penstemon debilis* be qualitatively monitored for 5 years; limit surface disturbance and require no surface disturbance within 100 ft (33 m) of occupied habitat (not including reclamation activities); provide stipulations to protect pollinators; recommend limiting surface disturbance to times when the plant is dormant (October to

March); require avoidance of designing projects that affect storm water flows, sediment, or other surface materials flows into occupied habitat; limit undercutting; and require temporary fencing to prevent encroachment into occupied habitat. Further, the BMPs require specific protective measures for reclamation activities in the Logan Wash Areas, including coordinating with CNAP prior to reclamation activities, marking plants, constructing temporary barriers to protect the plants, installing protective matting over plants if necessary for reclamation activities, and transplanting plants (if necessary).

Within the CNAs, general BMPs include limiting off-road vehicle use to existing routes and establishing procedures to limit this use in areas within 100 ft (33 m) of occupied habitat, limiting dust from roads, performing quantitative monitoring to track the status of *P. debilis*, and providing protective stipulations for noxious weed control and revegetation efforts. The BMPs also limit collection of *P. debilis* (CNAP and Oxy 2012, Appendix E).

As further evidence of the partnership between Oxy and CNAP and their commitment to the conservation of *P. debilis*, additional general BMPs were recently developed for the CNAs and adjacent lands, extending benefits to the species beyond the borders of the CNA designation. These BMPs include guidelines to:

- (1) limit surface disturbance by transporting water by pipelines instead of trucks, reducing visits to well-sites, maximizing drilling technology through high-efficiency rigs, directional drilling, multi-well pads, coiled-tubing unit rigs to minimize disturbance, and limiting the number of rig moves and traffic;
- (2) conduct dust abatement activities during the growing season (April to

September);

(3) reclaim disturbances and re-vegetate areas with native plants, including forb species that would provide resources for pollinators at optimal times for seed germination and establishment, and track the success of this seeding with follow up seeding if necessary;

(4) ensure that any straw bales used are weed free;

(5) increase pollinator presence by creating nesting substrates;

(6) conduct surveys in all accessible suitable habitat within 330 ft (100 m) of a project disturbance;

(7) protect any new populations of *Penstemon debilis* that are located, Oxy and CNAP would then protect these populations, with more than 75 individuals, through subsequent CNAs; and

(8) conduct noxious weed control that limits the use of herbicides within specific distances of occupied habitat, but that also protects occupied habitat from invasive plants (CNAP and Oxy 2012, Appendix F).

Benefits of Inclusion

If these private lands were included in the designation, section (7)(a)(2) consultations would occur on private (Oxy) lands only if there were proposed activities involving a Federal action. A Federal action would most likely arise for drainage crossings (Army Corps permits); other instances of a Federal action are unlikely because any Federal actions or funding would be extremely limited on lands owned by Oxy.

There are no Federal minerals below Oxy lands that were proposed as critical habitat. Drainage crossings are generally far removed from *Penstemon debilis* habitat, making this action less likely.

By including these lands in the critical habitat designation, it would be more widely known that these areas have the PCEs for *Penstemon debilis*.

Benefits of Exclusion

- Cooperative efforts for the management and conservation of *Penstemon debilis* will continue, and ongoing conservation partnerships will be strengthened.
- Oxy will continue implementing conservation actions for *Penstemon debilis* on their lands through CNA Agreement and BMPs. This provides a better level of protection from adverse modification or destruction of habitat that that provided through a consultation under section 7 of the Act. Furthermore, Oxy has an excellent track record protecting *P. debilis*.

- Pollinator and habitat BMPs will apply outside of specific Natural Areas.

The exclusion would provide recognition for the proactive conservation efforts that have been implemented in practice by Oxy and CNAP.

Benefits of Exclusion Outweigh the Benefits of Inclusion

Ongoing management of the Mount Callahan Natural Area since 1987, consistent with the conservation measures and BMPs, demonstrates a long-term commitment and partnership by Oxy and the CNAP. Furthermore, the Mount Callahan Saddle Natural Area was added in 2008 and the Mount Logan Mine Natural Area is being added in 2012,

demonstrating an expansion of and commitment to conservation efforts, as discussed above. In addition, Oxy has agreed to extend their termination clause on the agreement from 3 months to 2 years, again, demonstrating a commitment to conservation of the species and partnership with CNAP.

Oxy manages the majority of three of the four viable populations of *Penstemon debilis*. These populations all occur on private lands (over private minerals), where a Federal action will only seldom, if ever, provide protection through section (7)(a)(2) consultation. Without the cooperation of this important partner and their partnership with CNAP, the recovery of *P. debilis* will be much more difficult. We believe that the articles of designation and accompanying BMPs for *P. debilis* will benefit the species more than the occasional consultation that may occur because of a Federal nexus on these lands.

Exclusion Will Not Result in Extinction of the Species

The partnership between Oxy and CNAP has given rise to an agreement that provides conservation strategies and measures consistent with currently accepted principles of conservation biology and provides better protection for *Penstemon debilis* from adverse modification or destruction of habitat than that provided through a consultation under section 7 of the Act as explained above. Because of the long-term partnership between Oxy and CNAP, implementation of their agreement, Oxy's long-term and excellent commitment to conserving the species, evidence that Oxy intends to

continue implementing this agreement, and intentions to expand these commitments, there is a reasonable expectation that the agreement will be implemented into the future and we believe this exclusion will not result in the extinction of the species.

Required Determinations

Regulatory Planning and Review—Executive Orders 12866 and 13563

Executive Order 12866 provides that the Office of Information and Regulatory Affairs (OIRA) will review all significant rules. The OIRA has determined that this rule is not significant.

Executive Order 13563 reaffirms the principles of E.O. 12866 while calling for improvements in the nation's regulatory system to promote predictability, to reduce uncertainty, and to use the best, most innovative, and least burdensome tools for achieving regulatory ends. The executive order directs agencies to consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public where these approaches are relevant, feasible, and consistent with regulatory objectives. E.O. 13563 emphasizes further that regulations must be based on the best available science and that the rulemaking process must allow for public participation and an open exchange of ideas. We have developed this rule in a manner consistent with these requirements.

Regulatory Flexibility Act (5 U.S.C. 601 et seq.)

Under the Regulatory Flexibility Act (RFA) (5 U.S.C. 601 *et seq.*), as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996 (5 U.S.C 801 *et seq.*), whenever an agency must publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effects of the rule on small entities (small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of an agency certifies the rule will not have a significant economic impact on a substantial number of small entities. The SBREFA amended the RFA to require Federal agencies to provide a certification statement of the factual basis for certifying that the rule will not have a significant economic impact on a substantial number of small entities. In this final rule, we are certifying that the critical habitat designation for *Ipomopsis polyantha*, *Penstemon debilis*, and *Phacelia submutica* will not have a significant economic impact on a substantial number of small entities. The following discussion explains our rationale.

According to the Small Business Administration, small entities include small organizations, such as independent nonprofit organizations; small governmental jurisdictions, including school boards and city and town governments that serve fewer than 50,000 residents; as well as small businesses. Small businesses include manufacturing and mining concerns with fewer than 500 employees, wholesale trade entities with fewer than 100 employees, retail and service businesses with less than \$5

million in annual sales, general and heavy construction businesses with less than \$27.5 million in annual business, special trade contractors doing less than \$11.5 million in annual business, and agricultural businesses with annual sales less than \$750,000. To determine if potential economic impacts on these small entities are significant, we consider the types of activities that might trigger regulatory impacts under this rule, as well as the types of project modifications that may result. In general, the term “significant economic impact” is meant to apply to a typical small business firm's business operations.

To determine if the rule could significantly affect a substantial number of small entities, we consider the number of small entities affected within particular types of economic activities (e.g., oil and gas development, transportation projects, and agriculture and grazing). We apply the “substantial number” test individually to each industry to determine if certification is appropriate. However, the SBREFA does not explicitly define “substantial number” or “significant economic impact.” Consequently, to assess whether a “substantial number” of small entities is affected by this designation, this analysis considers the relative number of small entities likely to be impacted in an area. In some circumstances, especially with critical habitat designations of limited extent, we may aggregate across all industries and consider whether the total number of small entities affected is substantial. In estimating the number of small entities potentially affected, we also consider whether their activities have any Federal involvement.

Designation of critical habitat only affects activities authorized, funded, or carried out by Federal agencies. Some kinds of activities are unlikely to have any Federal involvement and so will not be affected by critical habitat designation. In areas where the species is present, Federal agencies already are required to consult with us under section 7 of the Act on activities they authorize, fund, or carry out that may affect *Ipomopsis polyantha*, *Penstemon debilis*, and *Phacelia submutica*. Federal agencies also must consult with us if their activities may affect critical habitat. Therefore, designation of critical habitat could result in an additional economic impact on small entities due to the requirement to reinitiate consultation for ongoing Federal activities (see *Application of the “Adverse Modification Standard”* section).

In our FEA of the critical habitat designation, we evaluated the potential economic effects on small business entities resulting from conservation actions related to the listing of *Ipomopsis polyantha*, *Penstemon debilis*, and *Phacelia submutica* and the potential economic effects resulting from the designation of critical habitat. The analysis is based on the estimated impacts associated with the rulemaking as described in Chapters 2 through 5 and Appendix A of the analysis and evaluates the potential for economic impacts related to: (1) oil and gas development, (2) transportation projects, (3) agriculture and grazing, (4) recreation, and (5) active species management, such as fencing efforts being done by Federal and State agencies.

Small entities represent 60 percent of all entities in the oil and gas development industry that may be affected. The analysis expects conservation efforts for the three

plants to affect companies that are involved with drilling for oil and gas and that lease or plan to lease Federal lands. Although we predict that drilling activity will not be precluded by the designation, we anticipate requesting that drilling companies undertake project modifications to reduce potential impacts to the habitat. The costs of implementing these project modifications are one impact of the regulation. In addition, affected companies will incur administrative costs associated with the section 7 consultation process.

The FEA estimates that between 0.23 and 5.1 oil and gas development projects are undertaken in the study area annually (total number of projects divided by 20 years). We multiply these projects by the percentage of small entities in these counties, or approximately 60 percent, to identify the annual number of projects likely to be undertaken by small entities (0.14 to 3.06 projects annually). Some of these projects will only incur incremental administrative costs because they are located close to occupied habitat. In these cases, the project modification costs will be incurred regardless of the designation of critical habitat. Projects experiencing the highest annual incremental costs are located in unoccupied areas. We multiply the per-project costs in these unoccupied areas by the total number of annual projects undertaken by small entities and then divide by the number of affected small entities to estimate per-entity costs. These impacts are then compared to average annual sales per small business in the oil and gas development sector. On average, annual incremental impacts per small drilling company represent 0.01 to 0.27 percent of small developers' annual average sales.

Based on estimates and calculations, fewer than two to four small entities may be affected annually by the critical habitat designation. These entities will likely experience costs equivalent to less than 1 percent of annual revenues. Importantly, these estimates assume each well pad is drilled by a separate entity. In the case that one small company drills more well pads than predicted, impacts to that company are underestimated, and the annual number of affected entities is overstated.

In summary, we considered whether this designation would result in a significant economic effect on a substantial number of small entities. Based on the above reasoning and currently available information, we concluded that this rule would not result in a significant economic impact on a substantial number of small entities. Therefore, we are certifying that the designation of critical habitat for *Ipomopsis polyantha*, *Penstemon debilis*, and *Phacelia submutica* will not have a significant economic impact on a substantial number of small entities, and a regulatory flexibility analysis is not required.

Energy Supply, Distribution, or Use—Executive Order 13211

Executive Order 13211 (Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use) requires agencies to prepare Statements of Energy Effects when undertaking certain actions. OMB has provided guidance for implementing this Executive Order that outlines nine outcomes that may constitute “a significant adverse effect” when compared to not taking the regulatory action under consideration.

Critical habitat designation for the three plants is anticipated to affect oil and gas activities. However, the Service is more likely to recommend a series of project modifications that will allow for work within critical habitat, rather than complete avoidance of critical habitat. Therefore, reductions in oil and natural gas production are not anticipated. Furthermore, given the small fraction of projects affected, approximately three or fewer, project modification costs are not anticipated to increase the cost of energy production or distribution in the United States in excess of 1 percent, one of the nine thresholds contained in Executive Order 13211. Thus, none of the nine threshold levels of impact provided by OMB is exceeded. Therefore, designation of critical habitat is not expected to lead to any adverse outcomes (such as a reduction in oil and natural gas production or distribution), and a Statement of Energy Effects is not required.

Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.)

In accordance with the Unfunded Mandates Reform Act (2 U.S.C. 1501 *et seq.*), we make the following findings:

(1) This rule will not produce a Federal mandate. In general, a Federal mandate is a provision in legislation, statute, or regulation that would impose an enforceable duty upon State, local, or Tribal governments, or the private sector, and includes both “Federal intergovernmental mandates” and “Federal private sector mandates.” These terms are defined in 2 U.S.C. 658(5)–(7). “Federal intergovernmental mandate” includes a

regulation that “would impose an enforceable duty upon State, local, or tribal governments” with two exceptions. It excludes “a condition of Federal assistance.” It also excludes “a duty arising from participation in a voluntary Federal program,” unless the regulation “relates to a then-existing Federal program under which \$500,000,000 or more is provided annually to State, local, and tribal governments under entitlement authority,” if the provision would “increase the stringency of conditions of assistance” or “place caps upon, or otherwise decrease, the Federal Government’s responsibility to provide funding,” and the State, local, or Tribal governments “lack authority” to adjust accordingly. At the time of enactment, these entitlement programs were: Medicaid; Aid to Families with Dependent Children work programs; Child Nutrition; Food Stamps; Social Services Block Grants; Vocational Rehabilitation State Grants; Foster Care, Adoption Assistance, and Independent Living; Family Support Welfare Services; and Child Support Enforcement. “Federal private sector mandate” includes a regulation that “would impose an enforceable duty upon the private sector, except (i) a condition of Federal assistance or (ii) a duty arising from participation in a voluntary Federal program.”

The designation of critical habitat does not impose a legally binding duty on non-Federal Government entities or private parties. Under the Act, the only regulatory effect is that Federal agencies must ensure that their actions do not destroy or adversely modify critical habitat under section 7. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the

legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency. Furthermore, to the extent that non-Federal entities are indirectly impacted because they receive Federal assistance or participate in a voluntary Federal aid program, the Unfunded Mandates Reform Act would not apply, nor would critical habitat shift the costs of the large entitlement programs listed above onto State governments.

(2) We do not believe that this rule will significantly or uniquely affect small governments because it would not produce a Federal mandate of \$100 million or greater in any year; that is, it is not a “significant regulatory action” under the Unfunded Mandates Reform Act. The FEA concludes that incremental impacts may occur due to project modifications and administrative costs of consultation that may need to be made for oil and gas, transportation, grazing, and recreational activities; however, these are not expected to affect small governments to the extent described above. Consequently, we do not believe that the critical habitat designation would significantly or uniquely affect small government entities. As such, a Small Government Agency Plan is not required.

Takings—Executive Order 12630

In accordance with Executive Order 12630 (Government Actions and Interference with Constitutionally Protected Private Property Rights), we have analyzed the potential takings implications of designating critical habitat for *Ipomopsis polyantha*, *Penstemon debilis*, and *Phacelia submutica* in a takings implications assessment. As discussed

above, the designation of critical habitat affects only Federal actions. Although private parties that receive Federal funding, assistance, or require approval or authorization from a Federal agency for an action may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency.

We believe that the takings implications associated with this critical habitat designation will be insignificant, even though private lands are included as well as Federal lands. Impacts of critical habitat designation may occur on private lands where there is Federal involvement (e.g., Federal funding or permitting) subject to section 7 of the Act. Impacts on private entities also may result if the decision on a proposed action on federally owned land designated as critical habitat could affect economic activity on adjoining non-Federal land. Each action would be evaluated by the involved Federal agency, in consultation with the Service, in relation to its impact on these species' designated critical habitat. In the unexpected event that expensive modifications would be required to a project on private property, it is not likely that the economic impacts to the property owner would be such to support a takings action.

The takings implications assessment concludes that this designation of critical habitat for *Ipomopsis polyantha*, *Penstemon debilis*, and *Phacelia submutica* does not pose significant takings implications for lands within or affected by the designation.

Federalism—Executive Order 13132

In accordance with Executive Order 13132 (Federalism), this rule does not have significant Federalism effects. A Federalism impact summary statement is not required. In keeping with Department of the Interior and Department of Commerce policy, we requested information from, and coordinated development of, this critical habitat designation with appropriate State resource agencies in Colorado. We received three comments from the CNAP and have addressed them in the **Summary of Comments and Recommendations** section of the rule. The designation of critical habitat in areas currently occupied by *Ipomopsis polyantha*, *Penstemon debilis*, and *Phacelia submutica* imposes no additional restrictions to those currently in place and, therefore, has little incremental impact on State and local governments and their activities. The designation may have some benefit to these governments in that the areas that contain the physical or biological features essential to the conservation of the species are more clearly defined, and the elements of the features of the habitat necessary to the conservation of the species are specifically identified. This information does not alter where and what federally sponsored activities may occur. However, it may assist local governments in long-range planning (rather than having them wait for case-by-case section 7 consultations to occur).

Where State and local governments require approval or authorization from a Federal agency for actions that may affect critical habitat, consultation under section 7(a)(2) would be required. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the

legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency.

Civil Justice Reform—Executive Order 12988

In accordance with Executive Order 12988 (Civil Justice Reform), the Office of the Solicitor has determined that the rule does not unduly burden the judicial system and that it meets the applicable standards set forth in sections 3(a) and 3(b)(2) of the Order. We are designating critical habitat in accordance with the provisions of the Act. This final rule uses standard property descriptions and identifies the elements of physical or biological features essential to the conservation of *Ipomopsis polyantha*, *Penstemon debilis*, and *Phacelia submutica* within the designated areas to assist the public in understanding the habitat needs of the species.

Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.)

This rule does not contain any new collections of information that require approval by OMB under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*). This rule will not impose recordkeeping or reporting requirements on State or local governments, individuals, businesses, or organizations. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

National Environmental Policy Act (42 U.S.C. 4321 *et seq.*)

It is our position that, outside the jurisdiction of the U.S. Court of Appeals for the Tenth Circuit, we do not need to prepare environmental analyses pursuant to the National Environmental Policy Act (NEPA) (42 U.S.C. 4321 *et seq.*) in connection with designating critical habitat under the Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244). This position was upheld by the U.S. Court of Appeals for the Ninth Circuit (*Douglas County v. Babbitt*, 48 F.3d 1495 (9th Cir. 1995), cert. denied 516 U.S. 1042 (1996)). However, when the range of the species includes States within the Tenth Circuit, such as that of *Ipomopsis polyantha*, *Penstemon debilis*, and *Phacelia submutica*, under the Tenth Circuit ruling in *Catron County Board of Commissioners v. U.S. Fish and Wildlife Service*, 75 F.3d 1429 (10th Cir. 1996), we undertake NEPA analysis for critical habitat designation (77 FR 18157).

We completed NEPA analysis for this critical habitat designation. We notified the public of availability of the draft environmental assessment (Service 2012b, entire) for the proposed rule on March 27, 2012 (77 FR 18157). The final environmental assessment, as well as the finding of no significant impact, is available upon request from the Field Supervisor, Colorado Ecological Services Office (see **FOR FURTHER INFORMATION CONTACT** section), at <http://www.regulations.gov> at Docket No. FWS-R6-2011-0040, or on our Web site at <http://www.fws.gov/mountain-prairie/species/plants/3ColoradoPlants/index.html>.

Government-to-Government Relationship with Tribes

In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Act), we readily acknowledge our responsibilities to work directly with Tribes in developing programs for healthy ecosystems, to acknowledge that Tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to Tribes. We determined that there are no Tribal lands occupied by *Ipomopsis polyantha*, *Penstemon debilis*, and *Phacelia submutica* at the time of listing that contain the features essential for conservation of the species, and no Tribal lands unoccupied by *I. polyantha*, *P. debilis*, and *P. submutica* that are essential for the conservation of the species. Therefore, we are not designating critical habitat for the *I. polyantha*, *P. debilis*, and *P. submutica* on Tribal lands.

References Cited

A complete list of all references cited is available on the Internet at <http://www.regulations.gov> and upon request from the Western Colorado Ecological Services Office (see **FOR FURTHER INFORMATION CONTACT**).

Authors

The primary authors of this rulemaking are the staff members of Western Colorado Ecological Services Office.

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Regulation Promulgation

Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17--[AMENDED]

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Pub. L. 99-625, 100 Stat. 3500; unless otherwise noted.

2. Amend § 17.12(h) by revising the entries for “*Ipomopsis polyantha*,” “*Penstemon debilis*,” and “*Phacelia submutica*” under “Flowering Plants” in the List of

Endangered and Threatened Plants to read as follows:

§ 17.12 Endangered and threatened plants.

* * * * *

(h) * * *

SPECIES

Scientific Name	Common Name	Historic Range	Family	Status	When Listed	Critical Habitat	Special Rules
FLOWERING PLANTS							
* * * * *							
<i>Ipomopsis polyantha</i>	Pagosa skyrocket	U.S.A. (CO)	Polemoniaceae	E	792	17.96(a)	NA
* * * * *							
<i>Penstemon debilis</i>	Parachute beardtongue	U.S.A. (CO)	Plantaginaceae	T	792	17.96(a)	NA
* * * * *							
<i>Phacelia submutica</i>	DeBeque phacelia	U.S.A. (CO)	Hydrophyllaceae	T	792	17.96(a)	NA
* * * * *							

3. In § 17.96, amend paragraph (a) by adding entries for “*Phacelia submutica* (DeBeque phacelia)” in alphabetical order under Family Hydrophyllaceae, “*Penstemon debilis* (Parachute penstemon)” in alphabetical order under Family Plantaginaceae, and “*Ipomopsis polyantha* (Pagosa skyrocket)” in alphabetical order under Family Polemoniaceae, to read as follows:

§ 17.96 Critical habitat—plants.

(a) *Flowering plants.*

* * * * *

Family Hydrophyllaceae: *Phacelia submutica* (DeBeque phacelia)

(1) Critical habitat units are designated for Garfield and Mesa Counties, Colorado.

(2) The primary constituent elements of the physical and biological features essential to the conservation of *Phacelia submutica* consist of five components:

(i) *Suitable soils and geology.*

(A) Atwell Gulch and Shire members of the Wasatch formation.

(B) Within these larger formations, small areas (from 10 to 1,000 ft² (1 to 100 m²)) on colorful exposures of chocolate to purplish brown, light to dark charcoal gray, and tan clay soils. These small areas are slightly different in texture and color than the similar surrounding soils. Occupied sites are characterized by alkaline (pH range from 7 to 8.9) soils with higher clay content than similar nearby unoccupied soils.

(C) Clay soils that shrink and swell dramatically upon drying and wetting and are likely important in the maintenance of the seed bank.

(ii) *Topography.* Moderately steep slopes, benches, and ridge tops adjacent to valley floors. Occupied slopes range from 2 to 42 degrees with an average of 14 degrees.

(iii) *Elevation and climate.*

(A) Elevations from 4,600 ft (1,400 m) to 7,450 ft (2,275 m).

(B) Climatic conditions similar to those around DeBeque, Colorado, including suitable precipitation and temperatures. Annual fluctuations in moisture (and probably temperature) greatly influences the number of *Phacelia submutica* individuals that grow in a given year and are thus able to set seed and replenish the seed bank.

(iv) *Plant community.*

(A) Small (from 10 to 1,000 ft² (1 to 100 m²)) barren areas with less than 20 percent plant cover in the actual barren areas.

(B) Presence of appropriate associated species that can include (but are not limited to) the natives *Grindelia fastigiata*, *Eriogonum gordonii*, *Monolepis nuttalliana*, and *Oenothera caespitosa*. Some presence, or even domination by, invasive nonnative species, such as *Bromus tectorum*, may occur, as *Phacelia submutica* may still be found there.

(C) Appropriate plant communities within the greater pinyon-juniper woodlands that include:

(1) Clay badlands within the mixed salt desert scrub; or

(2) Clay badlands within big sagebrush shrublands.

(v) *Maintenance of the seed bank and appropriate disturbance levels.*

(A) Within suitable soil and geologies (see paragraph (2)(i) of this entry), undisturbed areas where seed banks are left undamaged.

(B) Areas with light disturbance when dry and no disturbance when wet.

(3) Critical habitat does not include manmade structures (such as buildings,

aqueducts, runways, roads, and other paved areas) and the land on which they are located existing within the legal boundaries on [INSERT DATE 30 DAYS AFTER DATE OF FEDERAL REGISTER PUBLICATION].

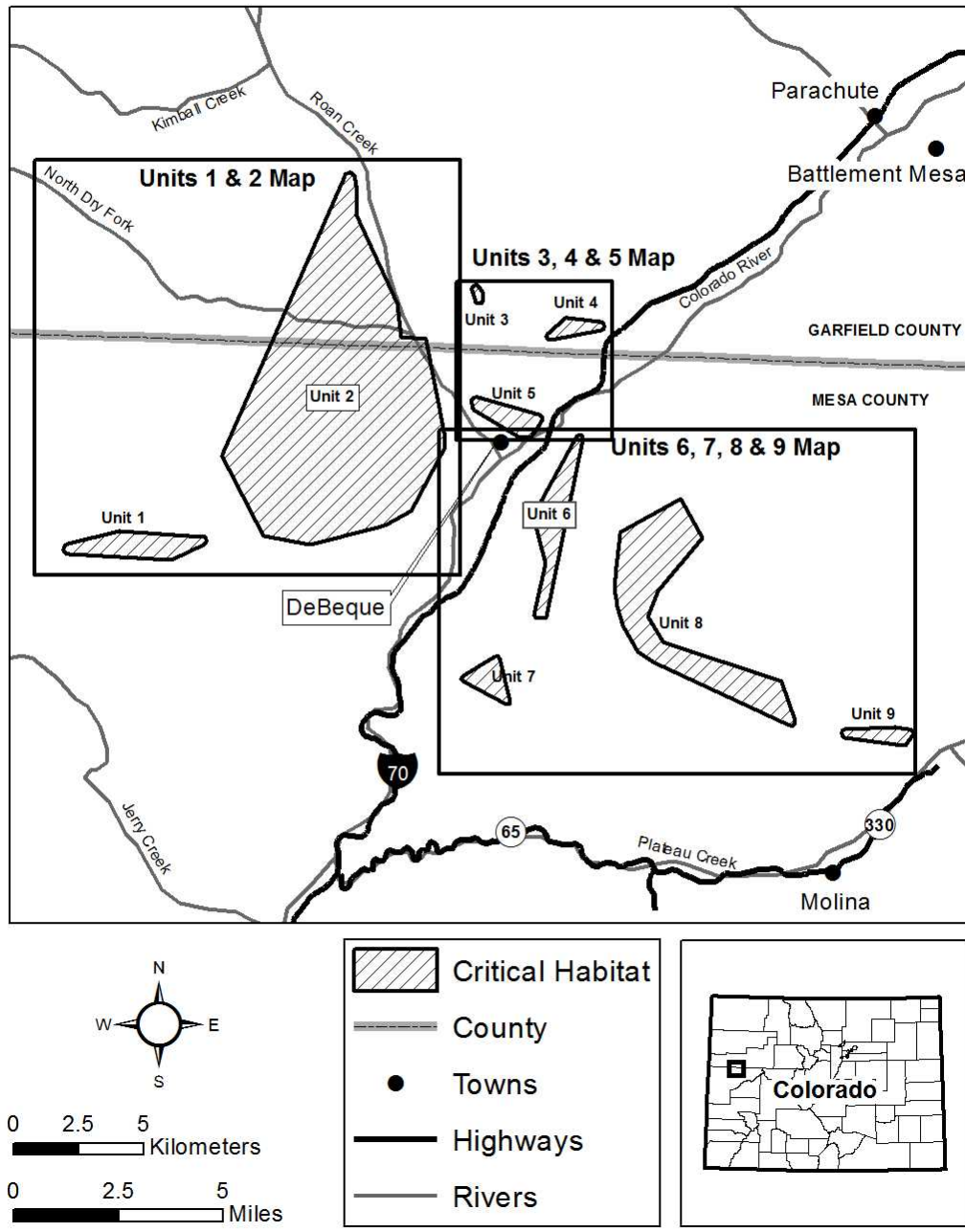
(4) Critical habitat map units. Data layers defining map units were created on a base of both satellite imagery (NAIP 2009) as well as USGS geospatial quadrangle maps and were mapped using NAD 83 Universal Transverse Mercator (UTM), zone 13N coordinates. Location information came from a wide array of sources. A habitat model prepared by the Colorado Natural Heritage Program also was utilized. The maps in this entry, as modified by any accompanying regulatory text, establish the boundaries of the critical habitat designation. The coordinates or plot points or both on which each map is based are available to the public on <http://regulations.gov> at Docket No. FWS–R6–ES–2011–0040, on our Internet site (<http://www.fws.gov/mountain-prairie/species/plants/3ColoradoPlants/index.html>), and at the Western Colorado Ecological Services Office, 764 Horizon Drive, Suite B, Grand Junction, CO 81506-3946.

(5) Note: Index map follows:

Index Map

Critical Habitat for *Phacelia submutica*

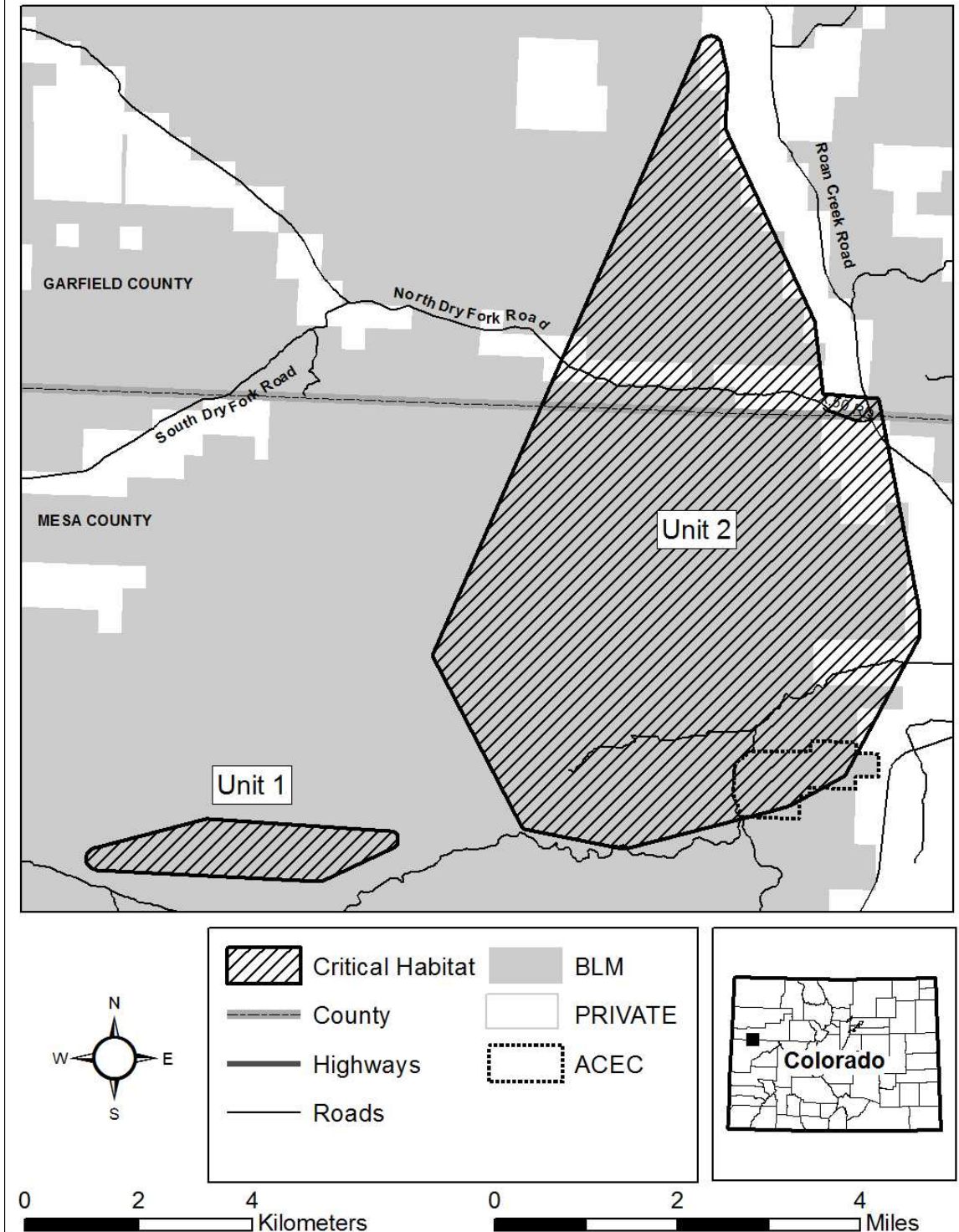
Mesa and Garfield Counties, Colorado



(6) Unit 1: Sulfur Gulch, Mesa County, Colorado. Note: Map of Unit 1 of critical habitat for *Phacelia submutica* is provided at paragraph (7) of this entry.

(7) Unit 2: Pyramid Rock, Garfield and Mesa Counties, Colorado. Note: Map of Units 1 and 2 of critical habitat for *Phacelia submutica* follows:

Units 1 and 2 Critical Habitat for *Phacelia submutica* Mesa County, Colorado

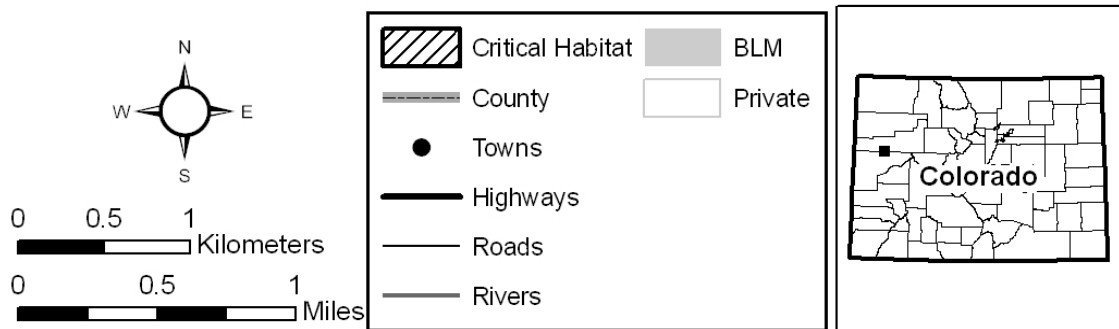
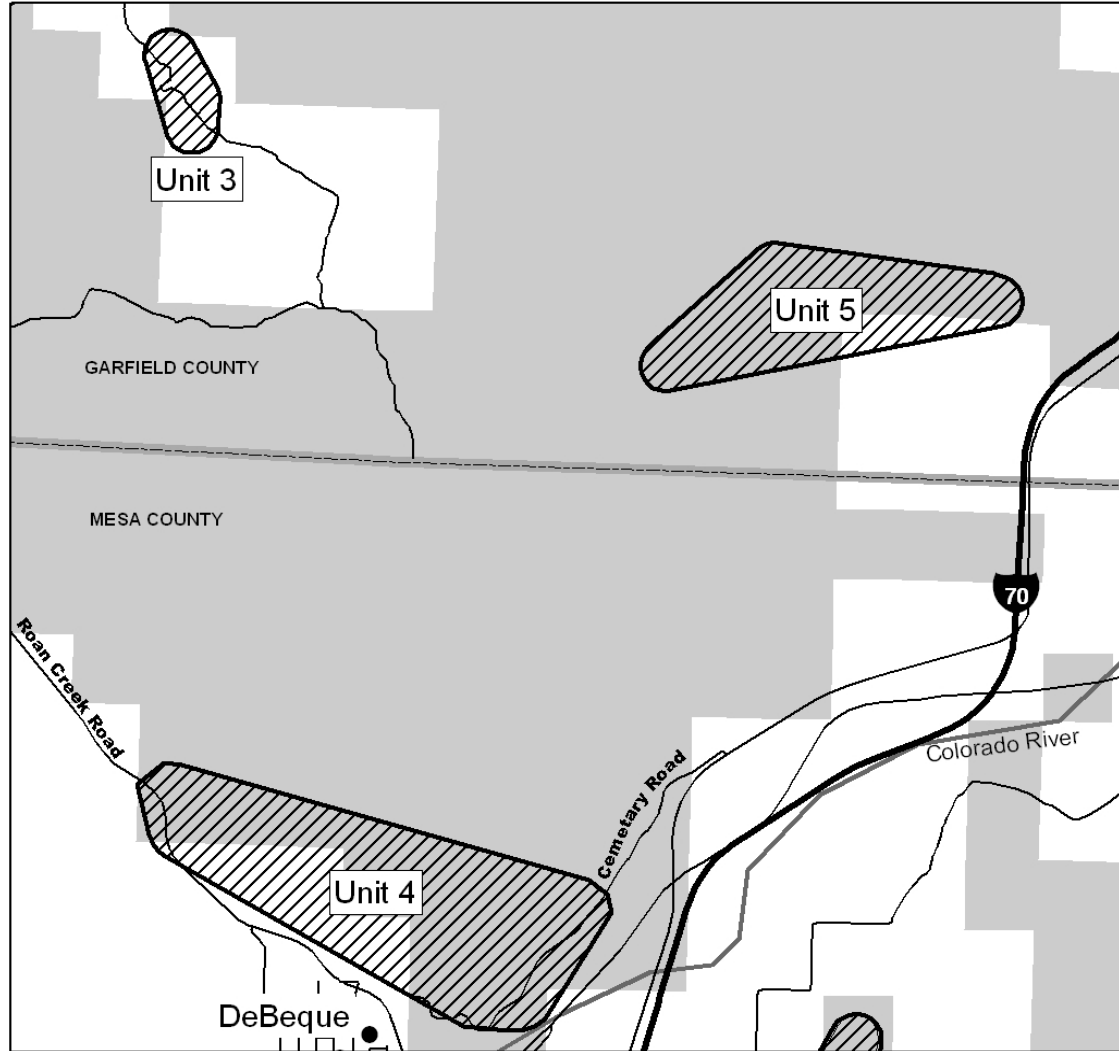


(8) Unit 3: Roan Creek, Garfield County, Colorado. Note: Map of Unit 3 of critical habitat for *Phacelia submutica* is provided at paragraph (10) of this entry.

(9) Unit 4: DeBeque, Mesa County, Colorado. Note: Map of Unit 4 of critical habitat for *Phacelia submutica* is provided at paragraph (10) of this entry.

(10) Unit 5: Mount Logan, Garfield County, Colorado. Note: Map of Units 3, 4, and 5 of critical habitat for *Phacelia submutica* follows:

Units 3, 4, and 5 Critical Habitat for *Phacelia submutica* Mesa and Garfield Counties, Colorado



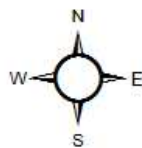
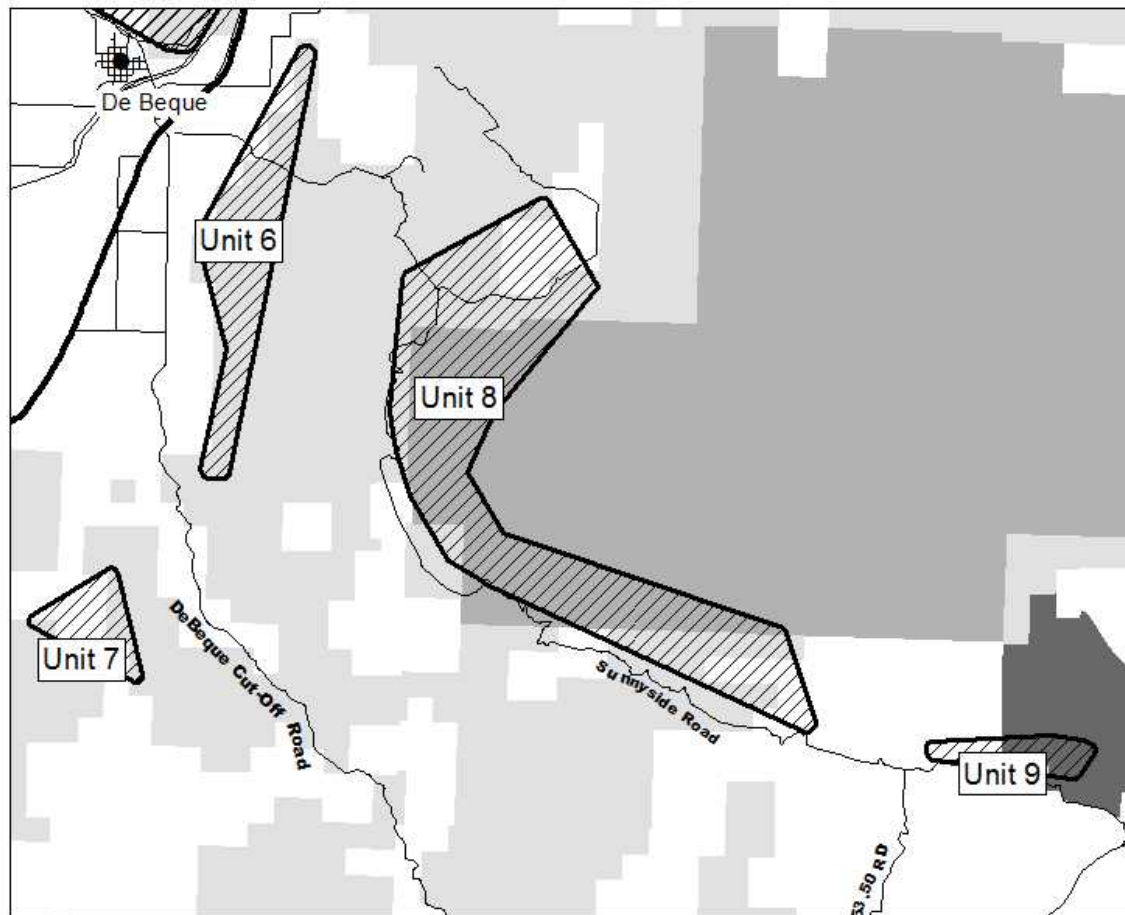
(11) Unit 6: Ashmead Draw, Mesa County, Colorado. Note: Map of Unit 6 of critical habitat for *Phacelia submutica* is provided at paragraph (14) of this entry.





(12) Unit 7: Baugh Reservoir, Mesa County, Colorado. Note: Map of Unit 7 of critical habitat for *Phacelia submutica* is provided at paragraph (14) of this entry.

(13) Unit 8: Horsethief Mountain, Mesa County, Colorado. Note: Map of Unit 8 of critical habitat for *Phacelia submutica* is provided at paragraph (14) of this entry.

(14) Unit 9: Anderson Gulch, Mesa County, Colorado. Note: Map of Units 6, 7, 8, and 9 of critical habitat for *Phacelia submutica* follows:

Units 6, 7, 8, and 9 Critical Habitat for *Phacelia submutica* Mesa County, Colorado



- | | |
|--|--|
|  Critical Habitat |  BLM |
|  Towns |  Private |
|  Highways |  USFS |
|  Roads |  CDOW |



0 2 4 Kilometers

0 2 4 Miles

* * * * *

Family Plantaginaceae: *Penstemon debilis* (Parachute penstemon)

(1) Critical habitat units are designated for Garfield County, Colorado.

(2) The primary constituent elements of the physical and biological features essential to the conservation of *Penstemon debilis* consist of five components:

(i) *Suitable soils and geology.*

(A) Parachute Member and the Lower Part of the Green River Formation.

(B) Appropriate soil morphology characterized by a surface layer of small to moderate shale channers (small flagstones) that shift continually due to the steep slopes and below a weakly developed calcareous, sandy to loamy layer with 40 to 90 percent coarse material.

(ii) *Elevation and climate.* Elevations from 5,250 to 9,600 ft (1,600 to 2,920 m).

Climatic conditions similar to those of the Mahogany Bench, including suitable precipitation and temperatures.

(iii) *Plant community.*

(A) Barren areas with less than 10 percent plant cover.

(B) Other oil shale endemics, which can include: *Mentzelia rhizomata*, *Thalictrum heliophilum*, *Astragalus lutosus*, *Lesquerella parviflora*, *Penstemon osterhoutii*, and *Festuca dasyclada*.

(C) Presence of *Penstemon caespitosa* for support of pollinators and connectivity between sites.

(iv) *Habitat for pollinators.*

(A) Pollinator ground, twig, and mud nesting areas. Nesting and foraging habitats suitable for a wide array of pollinators and their life-history and nesting requirements. A mosaic of native plant communities and habitat types generally would provide for this diversity (see paragraph (2)(iii) of this entry). These habitats can include areas outside of the soils identified in paragraph (2)(i) of this entry.

(B) Connectivity between areas allowing pollinators to move from one population to the next within units.

(C) Availability of other floral resources such as other flowering plant species that provide nectar and pollen for pollinators. Grass species do not provide resources for pollinators.

(D) A 3,280-ft (1,000-m) area beyond occupied habitat to conserve the pollinators essential for plant reproduction.

(v) *High levels of natural disturbance.*

(A) Very little to no soil formation.

(B) Slow to moderate but constant downward motion of the oil shale that maintains the habitat in an early successional state.

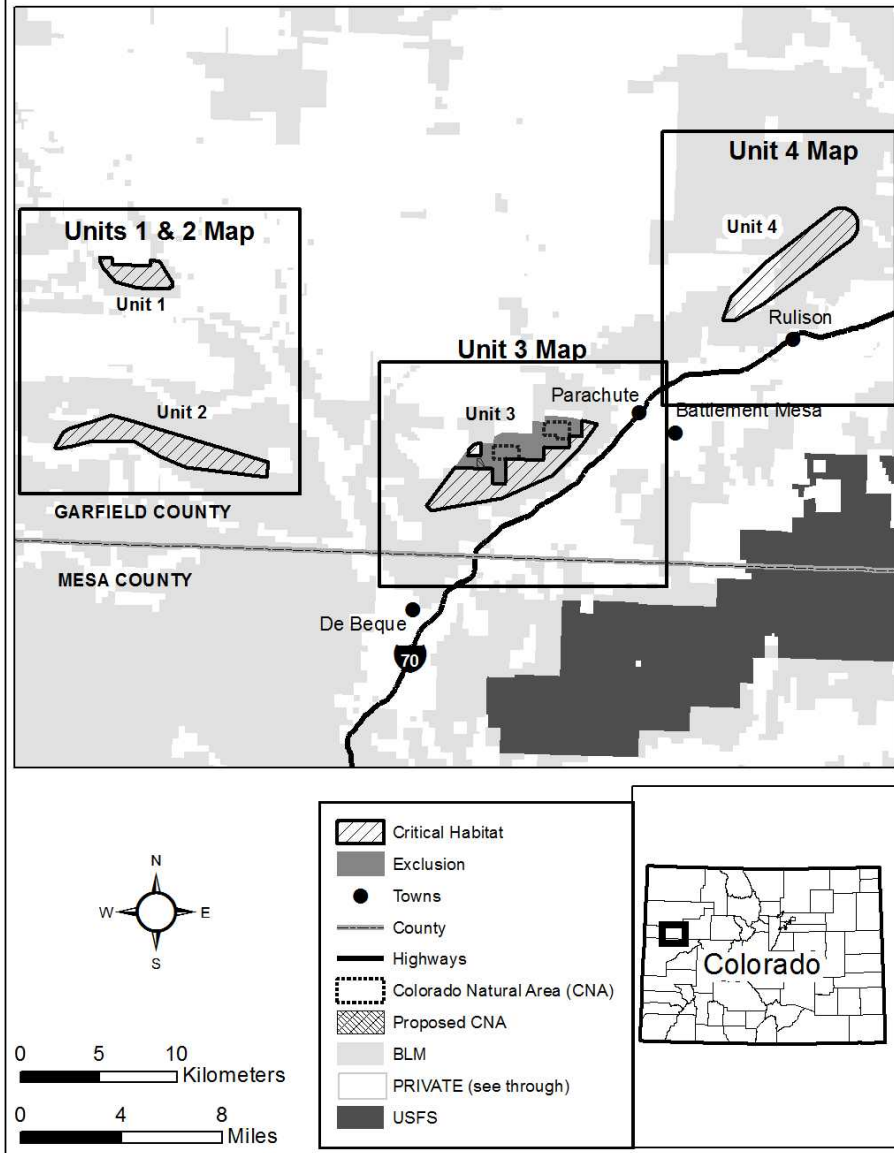
(3) Critical habitat does not include manmade structures (such as buildings, aqueducts, runways, roads, and other paved areas) and the land on which they are located existing within the legal boundaries on [INSERT DATE 30 DAYS AFTER DATE OF FEDERAL REGISTER PUBLICATION].

(4) Critical habitat map units. Data layers defining map units were created on a base of both satellite imagery (NAIP 2009) as well as USGS geospatial quadrangle maps and were mapped using NAD 83 Universal Transverse Mercator (UTM), zone 13N

coordinates. Location information came from a wide array of sources. Geology, soil, and landcover layers also were utilized. The maps in this entry, as modified by any accompanying regulatory text, establish the boundaries of the critical habitat designation. The coordinates or plot points or both on which each map is based are available to the public on <http://regulations.gov> at Docket No. FWS–R6–ES–2011–0040, on our Internet site (<http://www.fws.gov/mountain-prairie/species/plants/3ColoradoPlants/index.html>), and at the Western Colorado Ecological Services Office, 764 Horizon Drive, Suite B, Grand Junction, CO 81506-3946.

(5) Note: Index map of critical habitat for *Penstemon debilis* follows:

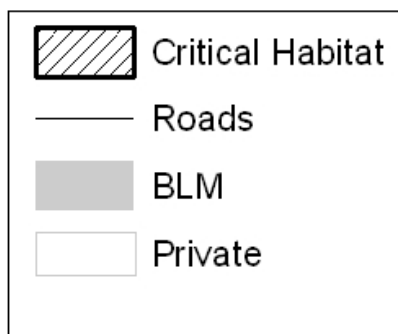
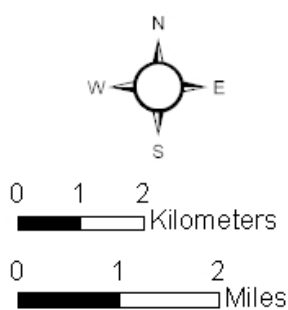
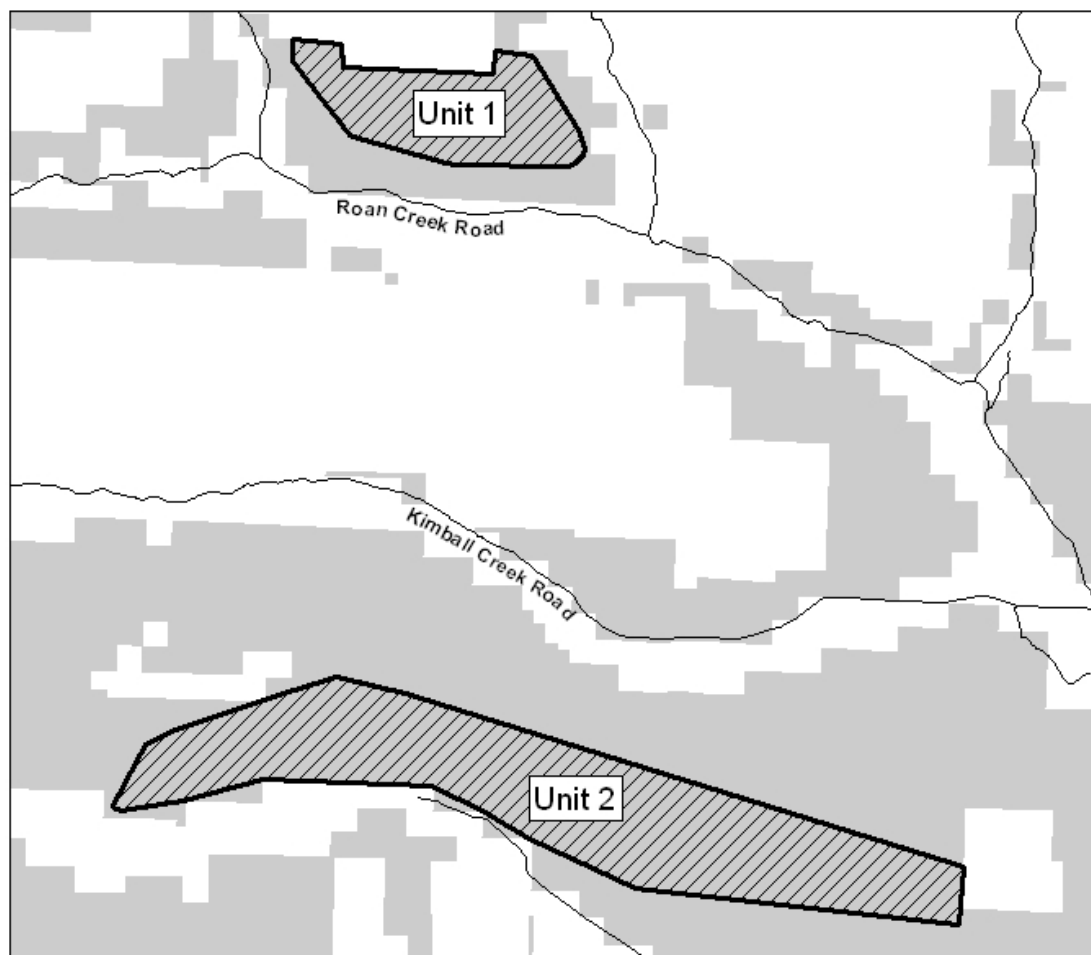
Index Map Critical Habitat for *Penstemon debilis* Garfield County, Colorado



(6) Unit 1: Brush Mountain, Garfield County, Colorado. Note: Map of Unit 1 of critical habitat for *Penstemon debilis* is provided at paragraph (7) of this entry.

(7) Unit 2: Cow Ridge, Garfield County, Colorado. Note: Map of Units 1 and 2 of critical habitat for *Penstemon debilis* follows:

Units 1 and 2 Critical Habitat for *Penstemon debilis* Garfield County, Colorado

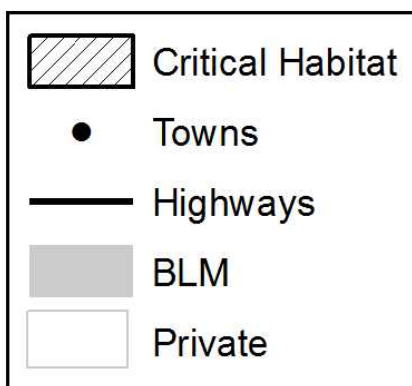
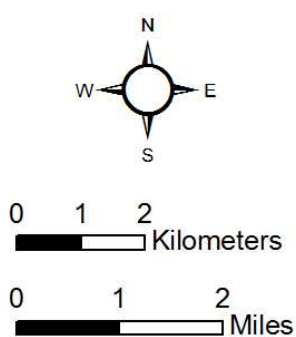
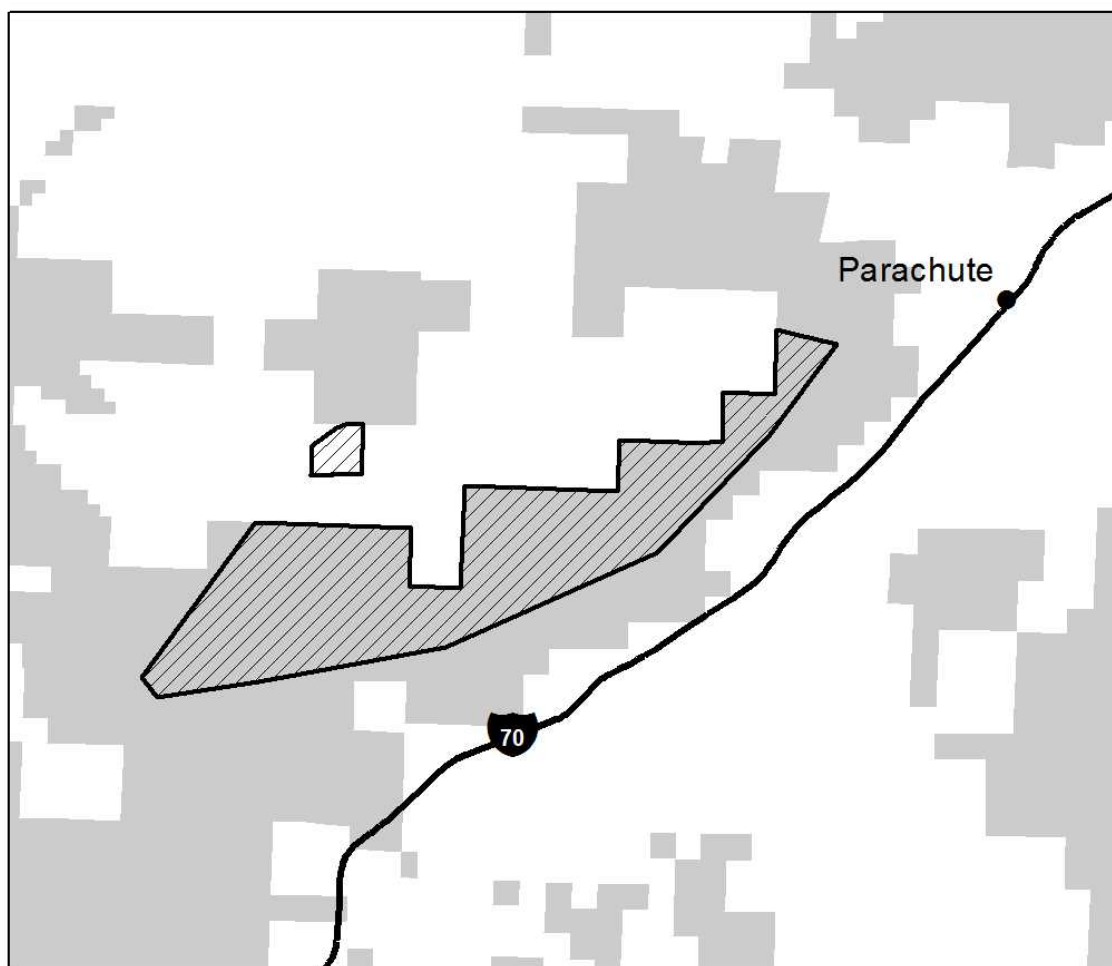


(8) Unit 3: Mount Callahan, Garfield County, Colorado . Note: Map of Unit 3
of critical habitat for *Penstemon debilis* follows:

Unit 3

Critical Habitat for *Penstemon debilis*

Garfield County, Colorado

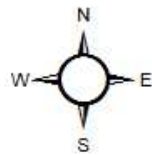
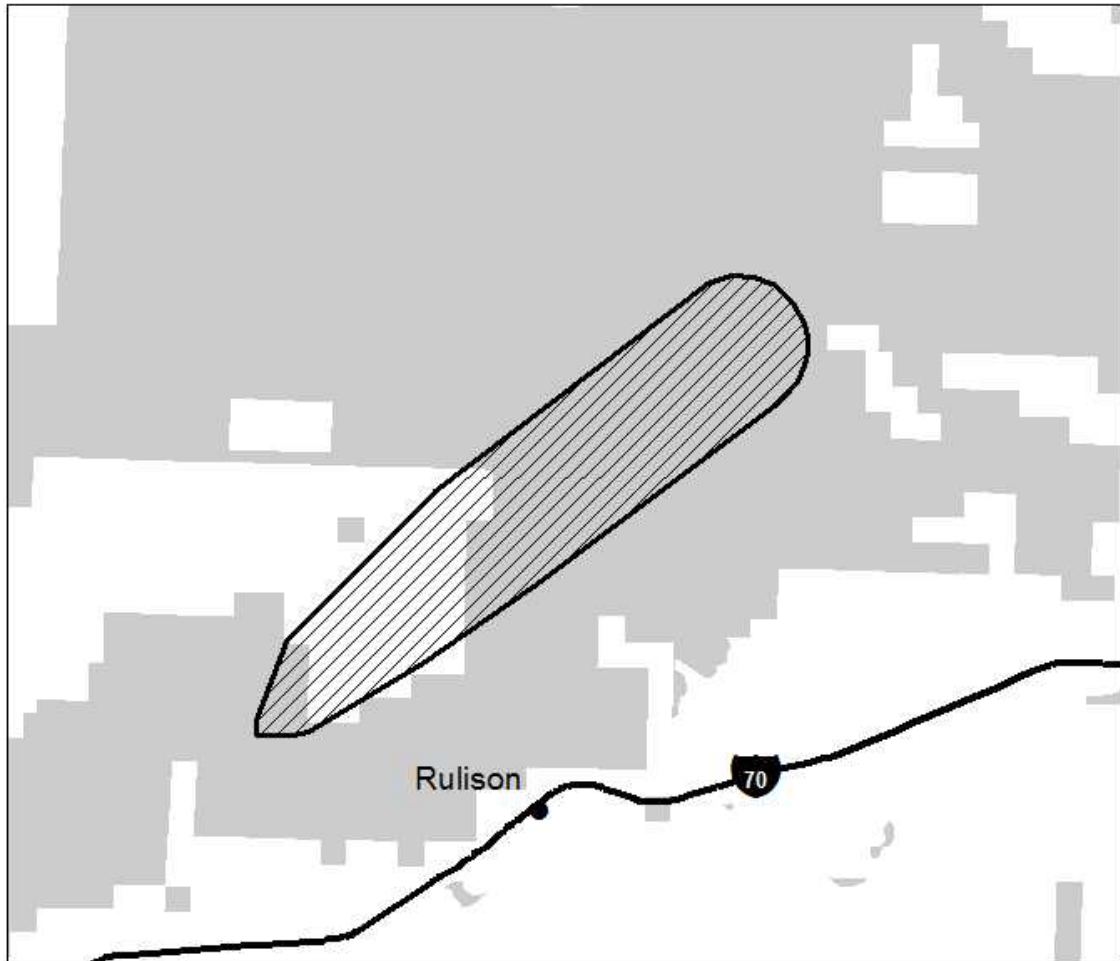


(9) Unit 4: Anvil Points, Garfield County, Colorado. Note: Map of Unit 4 of critical habitat for *Penstemon debilis* follows:

Unit 4

Critical Habitat for *Penstemon debilis*

Garfield County, Colorado



0 1 2
Kilometers
0 1 2
Miles

- Critical Habitat
- Towns
- Highways
- BLM
- Private



* * * * *

Family Polemoniaceae: *Ipomopsis polyantha* (Pagosa skyrocket)

(1) Critical habitat units are designated for Archuleta County, Colorado.

(2) The primary constituent elements of the physical and biological features essential to the conservation of *Ipomopsis polyantha* consist of five components:

(i) *Mancos shale soils*.

(ii) *Elevation and climate*. Elevations from 6,400 to 8,100 ft (1,950 to 2,475 m) and current climatic conditions similar to those that historically occurred around Pagosa Springs, Colorado. Climatic conditions include suitable precipitation; cold, dry springs; and winter snow.

(iii) *Plant community*.

(A) Suitable native plant communities (as described in paragraph (2)(iii)(B) of this entry) with small (less than 100 ft² (10 m²)) or larger (several hectares or acres) barren areas with less than 20 percent plant cover in the actual barren areas.

(B) Appropriate native plant communities, preferably with plant communities reflective of historical community composition, or altered habitats which still contain components of native plant communities. These plant communities include:

(1) Barren shales;

(2) Open montane grassland (primarily Arizona fescue) understory at the edges of open Ponderosa pine; or

(3) Clearings within the ponderosa pine/Rocky Mountain juniper and Utah juniper/oak communities.

(iv) *Habitat for pollinators*.

(A) Pollinator ground and twig nesting areas. Nesting and foraging habitats suitable for a wide array of pollinators and their life-history and nesting requirements. A mosaic of native plant communities and habitat types generally would provide for this diversity.

(B) Connectivity between areas allowing pollinators to move from one site to the next within each plant population.

(C) Availability of other floral resources, such as other flowering plant species that provide nectar and pollen for pollinators. Grass species do not provide resources for pollinators.

(D) A 3,280-ft (1,000-m) area beyond occupied habitat to conserve the pollinators essential for plant reproduction.

(v) *Appropriate disturbance regime.*

(A) Appropriate disturbance levels—Light to moderate, or intermittent or discontinuous disturbances.

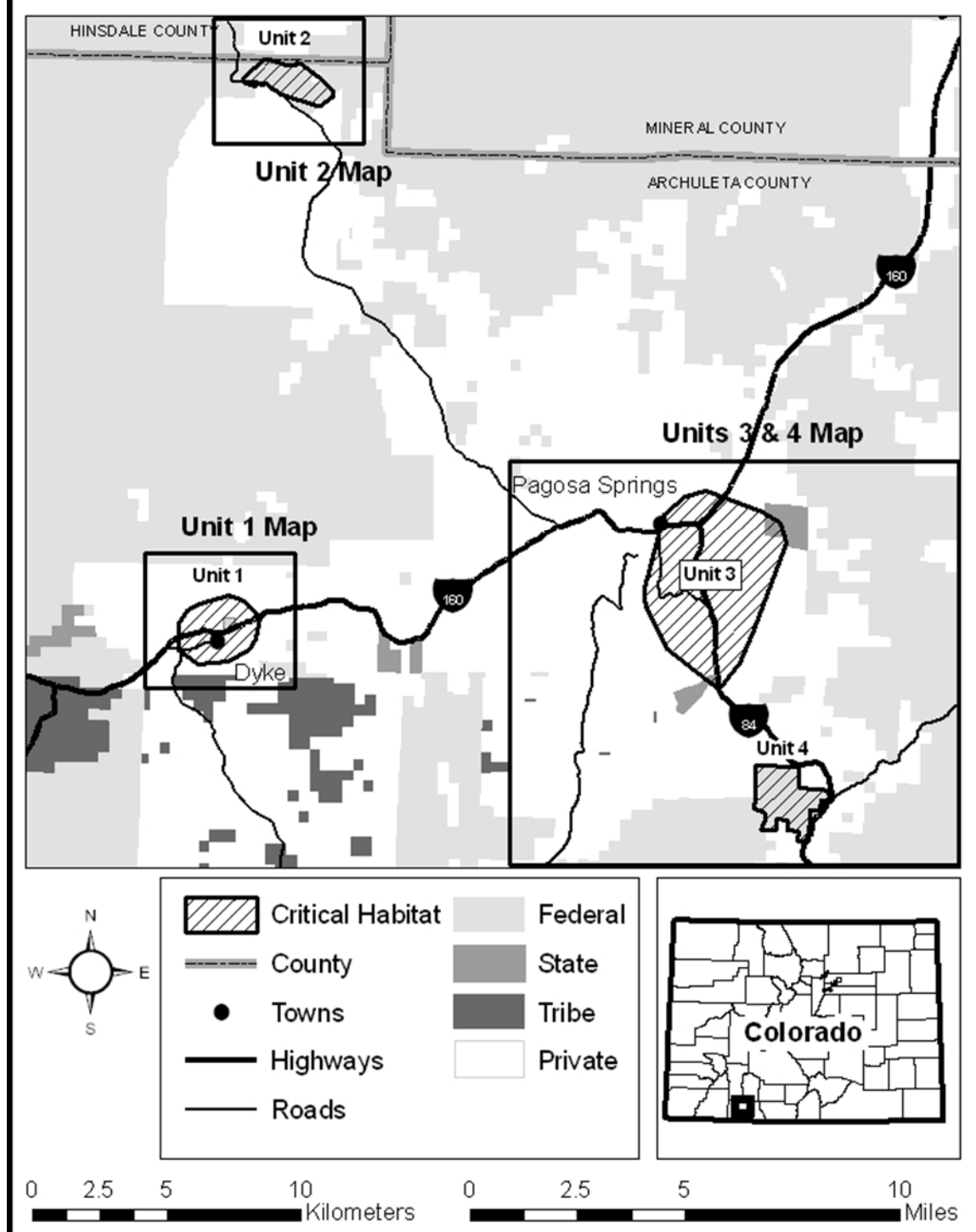
(B) Naturally maintained disturbances through soil erosion or human-maintained disturbances that can include light grazing, occasional ground clearing, and other disturbances that are not severe or continual.

(3) Critical habitat does not include manmade structures (such as buildings, aqueducts, runways, roads, and other paved areas) and the land on which they are located existing within the legal boundaries on [INSERT DATE 30 DAYS AFTER DATE OF FEDERAL REGISTER PUBLICATION]. However, because *Ipomopsis polyantha* is found along the edges of roads and buildings, the edges of roads and edges of structures are included in the designation.

(4) Critical habitat map units. Data layers defining map units were created on a base of both aerial imagery (NAIP 2009) as well as USGS geospatial quadrangle maps and were mapped using NAD 83 Universal Transverse Mercator (UTM), zone 13N coordinates. Location information came from a wide array of sources. The maps in this entry, as modified by any accompanying regulatory text, establish the boundaries of the critical habitat designation. The coordinates or plot points or both on which each map is based are available to the public on <http://regulations.gov> at Docket No. FWS–R6–ES–2011–0040, on our Internet site (<http://www.fws.gov/mountain-prairie/species/plants/3ColoradoPlants/index.html>), and at the Western Colorado Ecological Services Office, 764 Horizon Drive, Suite B, Grand Junction, CO 81506-3946.

(5) Note: Index map of critical habitat for *Ipomopsis polyantha* follows:

Index Map Critical Habitat for *Ipomopsis polyantha* Archuleta County, Colorado

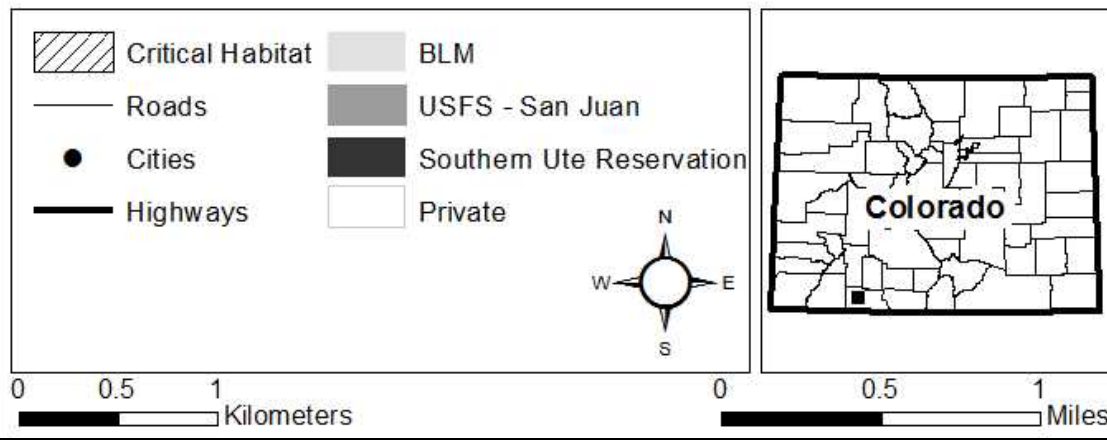


(6) Unit 1: Dyke, Archuleta County, Colorado. Note: Map of Unit 1 of critical habitat for *Ipomopsis polyantha* follows:

Unit 1

Critical Habitat for *Ipomopsis polyantha*

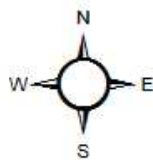
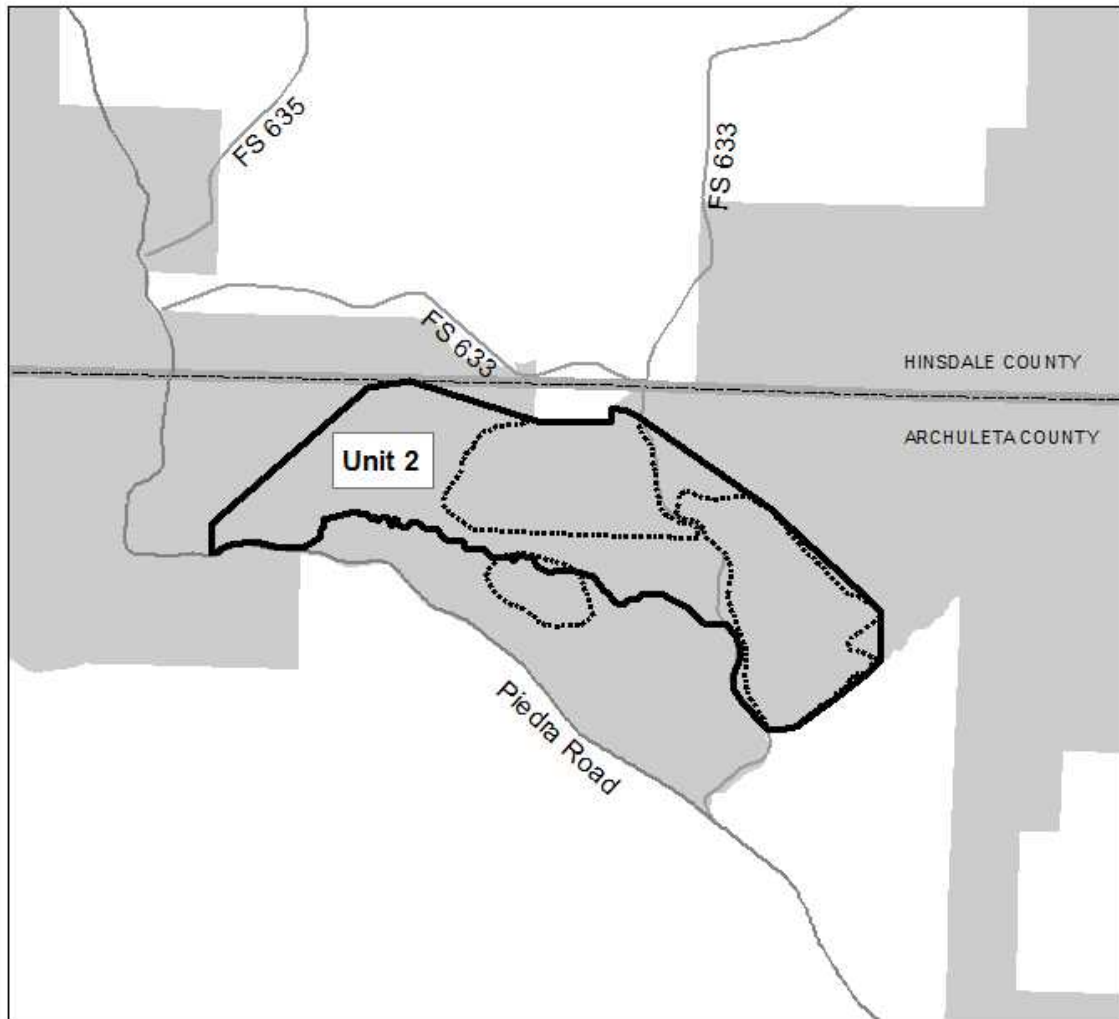
Archuleta County, Colorado



(7) Unit 2: O'Neal Hill Special Botanical Unit, Archuleta County, Colorado.

Note: Map of Unit 2 of critical habitat for *Ipomopsis polyantha* follows:

Unit 2 Critical Habitat for *Ipomopsis polyantha* Archuleta County, Colorado



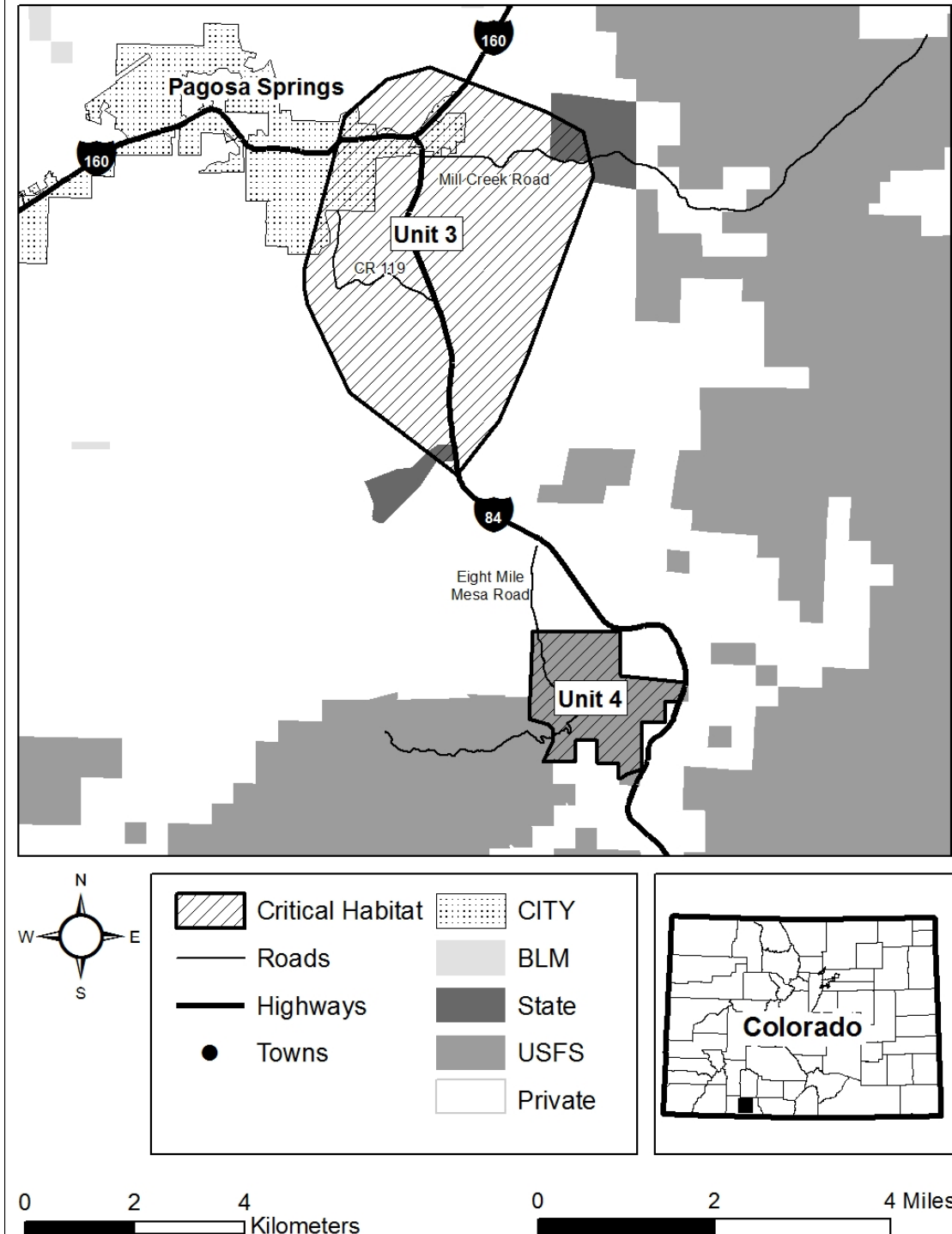
0 0.5 1
Kilometers

0 0.5 1
Miles

(8) Unit 3: Pagosa Springs, Archuleta County, Colorado. Note: Map of Unit 3 of critical habitat for *Ipomopsis polyantha* is provided at paragraph (9) of this entry.

(9) Unit 4: Eight Mile Mesa, Archuleta County, Colorado. Note: Map of Units 3 and 4 of critical habitat for *Ipomopsis polyantha* follows:

Units 3 and 4 Critical Habitat for *Ipomopsis polyantha* Archuleta County, Colorado



* * * * *

Dated: July 24, 2012

Rachel Jacobson

Acting Assistant Secretary for Fish and Wildlife and Parks

Billing Code 4310-55-P

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